

EMPLOYMENT
STATISTICS FOR THE
UNITED STATES



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EMPLOYMENT STATISTICS FOR THE UNITED STATES

A PLAN FOR THEIR NATIONAL COLLECTION *and*
A HANDBOOK OF METHODS RECOMMENDED BY
THE COMMITTEE ON GOVERNMENTAL LABOR
STATISTICS OF THE AMERICAN STATISTICAL
ASSOCIATION

EDITED BY
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ERRATA

On page 11, footnote 2, for Vol. XVII, read Vol. XVIII.

On page 127, in the Census Bureau classification, for XIV,
read XVI.

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FOREWORD

IN THIS publication the Committee on Governmental Labor Statistics of the American Statistical Association presents the results of its work on employment statistics. The appointment of this committee early in 1922 was part of a new policy of committee activity. Formerly the Association, in its by-laws, provided for five standing committees, appointed annually, on federal, state, municipal, business, and international statistics, respectively. The members of each of these committees were expected to be familiar with and to be interested in a variety of subjects of statistical inquiry in a broad field of activity. For example, in the Committee on Federal Statistics, one member was chosen to represent vital statistics, another to represent labor statistics, a third to represent trade statistics, a fourth to represent agricultural statistics, and so on. The work of each committee included several different backgrounds for the development of statistical methods. In consequence, it was difficult to secure a meeting of minds on the problems of any one subdivision of the field. There was little opportunity for the special training and experience of the members of these committees to function while constituted in this cross-section manner.

Since 1920 it has been the policy of the board of directors to appoint committees only when needed to inquire into subjects of specific statistical interest, as employment, vital statistics, marketing, standards, and training. At the annual meeting in December, 1921 Mr. R. D. Cahn, from the state Department of Labor of Illinois, urged the Association to

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provide for a committee on the measurement of employment. He pointed out the incomparable character of published data and the duplication of effort by those seeking employment facts for various purposes in his state. The need was emphasized for a group of experts to consider carefully the various uses for employment statistics, the record forms for their collection, the methods of procedure in gathering and checking the data, the methods of analysis and presentation of the results in current use; and to submit recommendations for improvement. The Association approved the idea and requested the board to appoint a committee. The grave business depression and widespread unemployment in the country had already centered attention upon the lack of adequate facts.

The need for this committee had been emphasized by the meeting of President Harding's Conference on Unemployment in the fall of 1921. The first business undertaken by this conference was "to inquire into the volume and distribution of unemployment." The data available were so unsatisfactory that even after a thorough examination of all the facts in the possession of state and federal bureaus of labor statistics the official estimate had to be a statement "that there are variously estimated from three and one-half to five and one-half millions unemployed."

At the close of this conference the Chairman, Mr. Herbert Hoover, appointed the Committee on Unemployment and Business Cycles, to make an exhaustive study of the fundamental factors in employment and the practical measures which can be taken to prevent or mitigate unemployment. The agency selected to conduct this investigation was the National Bureau of Economic Research, under the direction of Professor Wesley C. Mitchell, a former president of the Statistical Association. As a matter of primary importance this committee on the business cycle undertook to examine

FOREWORD

the available data and the methods of their collection, with the object of developing a plan for improving employment statistics in the entire country. The Russell Sage Foundation was requested by Mr. Hoover to make the inquiry necessary for the development of this plan, in co-operation with the National Bureau of Economic Research.

In this situation the American Statistical Association found the opportunity for co-operation. On February 16, 1922 the board of directors appointed a Committee on Measurement of Employment, as authorized at the annual meeting in December, 1921. Miss Mary Van Kleeck, a member of the Committee on Unemployment and Business Cycles and designated by the Russell Sage Foundation to conduct the inquiry into employment statistics for this committee, was selected as chairman of the new committee of the American Statistical Association. The chairman and 14 members of the original committee continue as active members of the present Committee on Governmental Labor Statistics.

A glance at the personnel of this committee (page xv) shows that it was composed of members of the Association who either were responsible for the collection of employment statistics in state or federal bureaus, or were using these statistics so intensively as to give a basis for judgment of their value. The object was to promote a careful study of the methods of gathering, checking, analyzing, and presenting the facts of employment, and to determine how far standard forms and methods are possible in meeting the needs of those who seek this information. Each member appointed on this committee was personally interested in improving the data on employment, either for practical uses of his own organization or for scientific purposes. The work of this committee took the place of the inquiry planned by the Russell Sage Foundation, and the section on employment statistics of the comprehensive report on the relation of business cycles to

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unemployment¹ was written by the chairman of this committee with the advice and assistance of the other members.

At the annual meeting of the American Statistical Association in December, 1922 the Committee on Measurement of Employment made a full report at one of the sessions. State and federal departments of labor had been invited to send representatives to this meeting, and persons using employment statistics were represented in the discussions. The committee was at this time continued under the broader designation, Committee on Governmental Labor Statistics. At the annual meeting in December, 1923 a series of detailed recommendations underlying the plan herein described were presented to the Association by the committee and approved by it.

On behalf of the members of the Statistical Association, who are keenly interested in improving sources of employment data and in promoting better methods of handling the facts, I take this opportunity to express appreciation to the Russell Sage Foundation for its generous co-operation, which has made it possible to assemble repeatedly the widely scattered members of this committee in close conference where their agreements and differences could be discussed, and to publish the results of their labors; and to the individual members of this committee, who have exhibited a most creditable spirit of co-operation in their endeavors to use the best ideas and experience of all in the finished product offered to the readers of this volume. It constitutes a noteworthy achievement in committee work for the Statistical Association.

ROBERT E. CHADDOCK,
President, American Statistical Association.

October, 1925.

¹ Business Cycles and Unemployment—Report and Recommendations of a Committee of the President's Conference on Unemployment, Including an Investigation Made under the Auspices of the National Bureau of Economic Research. New York, McGraw-Hill Book Company, Inc., 1923, Chap. XIX.

EDITORIAL NOTE

THIS volume attempts to present the consensus of opinion of the members of the Committee on Governmental Labor Statistics concerning problems involved in the collection and publication of adequate employment statistics for the United States. It has been prepared by an editorial sub-committee. The material has been drawn from the experience of the members of the committee, from the records of its discussions, and from reports by sub-committees appointed to investigate such special problems as: the form of the questionnaire, the classification of industries for employment statistics, the relation of federal reserve banks to state and federal collection of employment statistics, payroll statistics for construction industries, and payroll statistics for trade.

Chapter II, which discusses the use of statistics of employment and unemployment by the President's Conference on Unemployment in 1921, was contributed by the chairman of the committee, Mary Van Kleeck, who was a member of that conference. She was also a member of its Committee on Unemployment Statistics and later of the Committee on Unemployment and Business Cycles.

Special acknowledgment should be made of accounts of both methods and results contributed by members of the committee who are actively engaged in the collection of employment statistics: Charles E. Baldwin, of the United States Bureau of Labor Statistics; Eugene B. Patton, of the New York State Department of Labor; A. J. Altmeyer, of the Wisconsin Industrial Commission; R. D. Cahn, of the

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Illinois Department of Labor; Roswell F. Phelps, of the Massachusetts Department of Labor and Industries; J. Frederic Dewhurst, of the Philadelphia Federal Reserve Bank; and Joseph A. Becker, of the United States Department of Agriculture.

RALPH G. HURLIN,
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Editors.

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W. Randolph Burgess, Assistant Federal Reserve Agent, Federal Reserve Bank of New York.

R. D. Cahn, Chief of Bureau of Industrial Accident and Labor Research, Illinois Department of Labor.

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Max O. Lorenz, Director, Bureau of Statistics, Interstate Commerce Commission.

Royal Meeker, former Commissioner of Labor Statistics of the United States.

Eugene B. Patton, Chief Statistician, New York State Department of Labor.

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Woodlief Thomas, Division of Research and Statistics, Federal Reserve Board.

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F. G. Tryon, Statistician, U. S. Bureau of Mines.
Leo Wolman, National Bureau of Economic Research; and
Director of Research, Amalgamated Clothing Workers of
America.
Mary Van Kleeck, Director, Department of Industrial
Studies, Russell Sage Foundation (Chairman).
Ralph G. Hurlin, Director, Department of Statistics, Russell
Sage Foundation (Secretary).

The following members have been added to the committee
since this report was prepared:

Louis Bloch, Statistician, California Bureau of Labor Sta-
tistics.
R. H. Coats, Dominion Statistician of Canada.
Leonard W. Hatch, Director, Bureau of Statistics and In-
formation, New York State Department of Labor.
Richard H. Lansburg, Secretary of Labor and Industry,
Pennsylvania.
H. H. Ward, Deputy Minister of Labour, Canada.

PART I
RECOMMENDATIONS

CHAPTER I

A PLAN FOR NATIONAL COLLECTION

THE problem on which the Committee on Governmental Labor Statistics has worked may be summed up in this question: How can the essential facts which show whether the wage-earners of the United States are at work or out of work be made available periodically, promptly, and intelligibly for those who must take action whenever the information indicates an abnormal condition of business?

These statistics are needed to give a basis for sound economic policy in the management of business. The committee begins with the main conclusion of the Committee on Unemployment and Business Cycles as summed up by Herbert Hoover in an introduction to its report issued in March, 1923:

The general conclusion of the committee is that as the slumps [in business] are in the main due to the wastes, extravagance, speculation, inflation, overexpansion, and inefficiency in production developed during the booms, the strategic point of attack, therefore, is the reduction of these evils, mainly through the provision for such current economic information as will show the signs of danger and its more general understanding and use by producers, distributors, and banks, inducing more constructive and safer policies.¹

Of the statistics needed, this report states: "statistics of employment are highly important. . . . Conditions in business are invariably reflected in the volume of employ-

¹ Business Cycles and Unemployment—Report and Recommendations of a Committee of the President's Conference on Unemployment. Washington, Government Printing Office, 1923, p. vi. The report and recommendations of this committee were published also as a preface to the report of the investigation made under the auspices of the National Bureau of Economic Research; see footnote, page xii.

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ment. Employment statistics reflect the economic welfare of wage-earners and are information of the greatest social importance."

THE TASK OF THE COMMITTEE ON GOVERNMENTAL LABOR STATISTICS

The first recommendation of the Committee on Unemployment and Business Cycles was that the "collection of fundamental data" by governmental bureaus should be standardized and extended; that they should be current, periodic, and in comparable form for many industries; that they should be uniform and continuous; that agreement should be reached as to uniform definitions of terms and simplification of material; and that representatives of the various industries should aid the governmental bureaus in working out the questions to be asked and in securing the co-operation of their respective industries in establishing the habit of regular, prompt, and accurate reporting.

To aid in improving employment statistics was the original purpose for which the American Statistical Association appointed its Committee on Governmental Labor Statistics, composed of representatives of various federal and state bureaus in which data bearing on employment were being collected or whose co-operation in collecting and making them available was needed. Statisticians familiar with the uses of employment statistics were also included in the membership of the committee. At the same time, at the request of Mr. Hoover, the Russell Sage Foundation made an appropriation for a study of employment statistics, with a view to improving, standardizing, and extending them. This appropriation was used for the expenses of the committee. Instead of having an investigation made to give the basis for recommendations to governmental bureaus, governmental statisticians themselves came together for conference

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as members of the committee and reached agreements on methods and procedure which could immediately be put into effect.

The results of their agreement and their discussions of pertinent problems in method appear in the following pages. It is the purpose of this chapter to sketch the committee's plan for national collection, showing the type of information desired and the relation of various governmental bureaus to one another in the processes of collecting and publishing it.

THE PLAN RECOMMENDED

Eleven specific recommendations adopted by the committee outline its plan for employment statistics for the United States. They are as follows:

Co-ordination of Bureaus

I. That the co-ordinating center be the federal Bureau of Labor Statistics in the Department of Labor at Washington, and that there all statistics of employment collected by any other federal bureau in the discharge of its administrative responsibilities, or by any state bureau, be gathered together, co-ordinated, and published in a periodic report on employment throughout the nation.

II. That the initial responsibility for the collection of the statistics be placed upon each state to secure the necessary information for its own purposes and to report to the federal government such a sampling of its data as is necessary for a national record.

III. That those bureaus or departments in the federal government having a direct relation to certain industries collect employment data for those industries and report them to the federal Bureau of Labor Statistics: the Bureau of Mines for mines and quarries; the Interstate Commerce Commission for railroads; the Department of Agriculture for farms.

IV. That those federal agencies having need for these

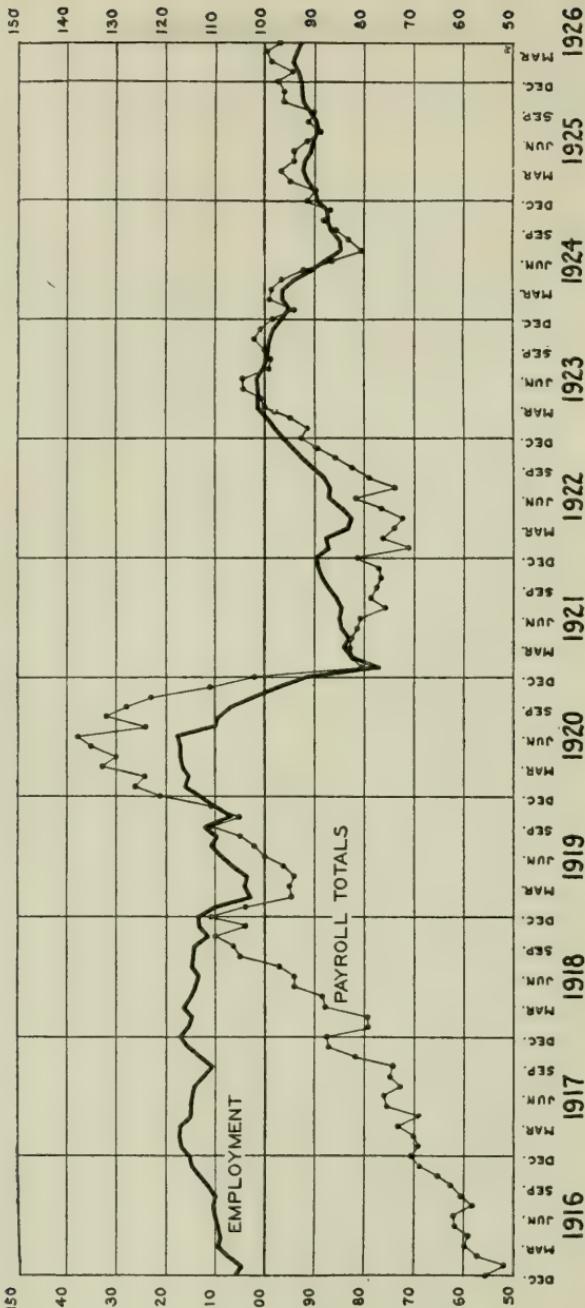


DIAGRAM 1.—INDEXES OF EMPLOYMENT AND AMOUNT OF PAYROLLS IN MANUFACTURING INDUSTRIES IN THE UNITED STATES PUBLISHED CURRENTLY BY THE UNITED STATES BUREAU OF LABOR STATISTICS

Base: 1923 average = 100

Reproduced from *Monthly Labor Review*.

PLAN FOR NATIONAL COLLECTION

statistics in their work co-operate in encouraging their extension and improvement and in giving them currency for use in business: the Federal Reserve Board in its relation to the banking system; the United States Employment Service in its task of co-ordinating the employment exchanges of the country and providing them with data needed in their operations; the Department of Commerce for the purpose of including adequate and timely information on employment in its publication of current business and industrial statistics, particularly in its *Survey of Current Business*.

Facts to Be Secured

V. That the two main questions asked be (1) the total number on the payroll, and (2) the total wages paid in one payroll period.

VI. That the interval between reports be one month and that the questions asked be answered for the payroll period which includes the fifteenth of the month.

VII. That the industries included—gauged by (a) their importance as a measure of economic activity, and (b) the feasibility of securing the information—be (1) Manufacturing in its main industrial divisions; (2) Mining and quarrying; (3) Communication; (4) Building construction; (5) Wholesale trade; (6) Retail trade; (7) Logging and lumber work; (8) Agriculture; and that the published reports show the facts for each of these main divisions and also separately for their important subdivisions.

VIII. That the selection of the sample be guided by these requirements: (a) It should represent a fairly equal percentage of the total number of wage-earners in each branch of industry and in each subdivision. (b) It should include in proper proportions establishments of different size in each industrial division. (c) For a state as a whole or for the nation as a whole, it should represent the various industries in proper proportions as measured by the number of wage-earners employed in the different localities in which each industry is found.

IX. That each state and the more important cities be separately treated in the report, as an aid to local action and

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as a means of making the national record more accurate by revealing variations in different localities.

Co-ordination with Other Statistics

X. That co-ordination with other data available regarding the trends of production and business activity be secured (a) by increasing, if possible, the promptness with which the data become available each month; and (b) by publishing them in so far as possible in the form of continuous index numbers.

Special Studies

XI. That more refined data showing, for instance, employment divided by sex, labor turnover, or total hours of employment of all workers on the payroll—known as “man-hours”—be gathered from time to time by these bureaus, in order to compare the significance of such information with the evidence contained in answers to the simpler questions proposed in the plan. On the basis of these special studies, it may prove feasible in time to collect these details monthly, but for the present, until a much larger number of industries throughout the country are included, it seems wise to require only the minimum of information suggested in the two questions calling for number of employes and total payroll.

EXPLANATION OF THE PLAN

The requirements which the committee sought to fulfil in working out this plan were, first, that the data must be (a) periodic; (b) promptly available; (c) national in scope, making possible a national index; (d) inclusive of all important industries of the country, and published separately for them; (e) available for different sections of the country and for important cities, to reveal variations in different localities; and (f) simple in form, to make possible prompt and general reporting. These requirements grew naturally out of the twofold purpose of employment statistics; namely, to show (1) trends of employment and unemployment as a social con-

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dition affecting human beings and their welfare; and (2) trends of production and business activity as a guide in business policies.

Second, in its recommendations regarding the relation of bureaus to one another and the plan of co-ordination, the committee was mindful of the fact that statistics of employment had been collected for some time and that a feasible plan must have the sanction of this past experience and must also be related to the present organization of governmental services. It seems hardly necessary to point out the importance of a better organization than now exists in the statistical work of the federal government, since duplication of work between departments not only causes waste but results in giving to the public fragmentary information. With the multiplication of problems on which statistics are needed, it is natural that there should be this difficulty. Moreover, in any effort to centralize statistics in a single governmental bureau, we would face the fact that statistics which are needed in the administrative routine of a department can perhaps be most effectively gathered by that department rather than by a centralized statistical bureau. The committee's recommendations would leave untouched the present plan of collection of statistics in the department in which they naturally belong, such as statistics of farms in the federal Department of Agriculture and of mines in the federal Bureau of Mines. But it would meet the need for co-ordination by developing a single co-ordinating center, which for statistics of employment, in the plan of the committee, should be the federal Bureau of Labor Statistics.

The placing of initial responsibility upon each state for the collection of these statistics is worthy of note as constituting an effective working relationship which keeps the advantage of centralization in Washington, while retaining the convenience of local collection and use. Each state needs to include

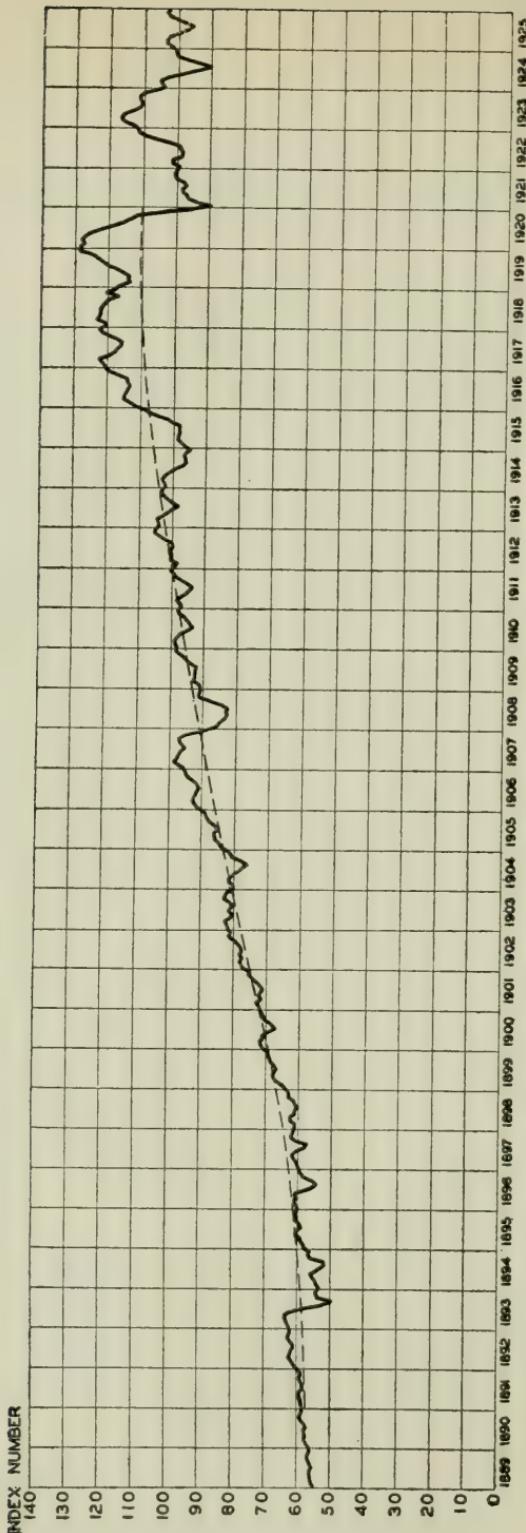


DIAGRAM 2.—INDEX OF EMPLOYMENT IN MANUFACTURING INDUSTRIES IN MASSACHUSETTS, 1889 TO 1925

Base: 1911 to 1913 average = 100

This is an extension of an index prepared by Ralph G. Hurlin and published in the *Annalist* for October 24, 1921. The curve is constructed from the data of the annual censuses of manufactures of Massachusetts, except the 1925 portion which is based on currently collected figures. It is not corrected for seasonal fluctuation or secular trend. The smooth trend line represents a ten-year moving average, in computing which it was possible to use annual figures for the three years, 1886 to 1888. The monthly data collected for these three years were not published and have since been destroyed or lost.

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a larger number of establishments in its own area to reflect industrial activities than the federal government needs from the same area for a national index. It is logical and efficient, therefore, for each state to collect the data and to send to the federal government such portion of its returns as may be needed for a national index and for a record of each important industry in the country.¹

DEVELOPMENT OF PAYROLL EMPLOYMENT STATISTICS

Although the current publication of employment figures from payrolls is a development of the last ten years only, statistics of this sort are not new. The United States Bureau of the Census has obtained statistics of the numbers employed monthly in manufacturing establishments for the years in which the national censuses of manufactures have been taken—every five years from 1899 to 1919, and subsequently every two years. In Massachusetts, in 1886, the office which was then known as the Bureau of Statistics of Labor inaugurated an annual census of manufactures, in which similar monthly employment figures were collected. This state census of manufactures has been continued each year since, thus giving Massachusetts the longest record of employment fluctuation which is anywhere available. Monthly employment figures were also gathered in an annual census of manufactures in New Jersey from 1893 to 1918. In Ohio monthly figures for employment in manufacturing industries were assembled each year from 1892 to 1906, and since 1914 a comprehensive canvass of employment and wages by months has been made annually, covering agriculture, construction, service, trade, transportation, and

¹ Concerning the importance of making employment statistics available in such detail that they can be combined and recombined for use in analyzing conditions in any area of the country as well as in any industry, see Lescohier, Don D., "Geographical Aspects of Statistics of Employment and Earnings," in *Journal of the American Statistical Association*, Vol. XVIII, pp. 772-776, June, 1923.

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public utilities, as well as manufacturing.¹ In all of these records, however, the monthly data for each year were compiled after the completion of the calendar year to which they referred, and were tabulated and made public only after an interval ranging from several months to a year or more.

The earliest *current* collection of such data in this country was made by the New York State Department of Labor. The impetus for their collection came during the depression of 1914-1915. The need for dependable statistics bearing on employment conditions was felt in many cities at this time, and various attempts were made to obtain them. A committee of the Mayor's Committee on Unemployment in New York City directed an inquiry to over 2,000 employers in 1914, asking for the number of persons on their payrolls for the week ending December 19, 1914, and for the same information for the corresponding week in 1913. The inquiry was carefully planned to include various lines of industry, and although only 602 responses were received, the results were regarded as distinctly valuable. Leonard W. Hatch, then chief statistician of the New York State Department of Labor, assisted in planning for this inquiry, and shortly afterwards that department began to collect monthly payroll statistics from employers in manufacturing industries throughout the state. The reporting establishments were selected to represent manufacturing industry as a whole. The first data were collected in June, 1915, but during the first year employers were requested to furnish figures for both the current month and the corresponding month in the preceding year; thus, in effect, the New York series of payroll statistics for manufacturing industries dates from June, 1914.

¹ While these later data have been collected and tabulated annually, they have been published only for the years 1914, 1915, and 1923. The United States Women's Bureau, however, is now making a study of employment fluctuation as it has affected women workers in Ohio industries, and this report will contain full series of Ohio data since 1914 for the more important industries.

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The federal Bureau of Labor Statistics began to collect payroll statistics shortly after the New York bureau. It confined itself, however, to fewer industries. Beginning with October, 1915 reports were obtained from employers in four industries—boots and shoes, cotton, cotton finishing, and hosiery and underwear. The list was extended, however, so that by the end of 1916, 13 manufacturing industries had been included.¹ Several of these series were carried back to December, 1914. In July, 1922 the scope of the inquiry was further enlarged; establishments engaged in additional manufacturing industries were then added, and since 1922 the reports have covered about 50 more or less distinct industries and have been fairly representative of manufacturing as a whole.

The depression of 1920-1921 greatly stimulated the collection of these figures. In January of 1921 the United States Employment Service entered the field, collecting and publishing monthly figures for manufacturing industries in 65 cities.² The Wisconsin Industrial Commission began collecting monthly employment statistics in July, 1920. For a time it gathered only those pertaining to manufacturing, but beginning with January, 1922 other industries were covered, including agriculture. This was the first attempt by any

¹ The industries added to the original four were: iron and steel (November, 1915); silk, wool (December, 1915); men's clothing, car building (February, 1916); cigars (March, 1916); leather, paper, automobiles (November, 1916). Bituminous coal mining was added in 1919, but was dropped in 1922 at the time of the coal strike.

² These figures are not now being collected. Their publication by the Employment Service was discontinued in 1922, although they continued to be collected by the Service and for a time the summary figures were published in the *Survey of Current Business* of the United States Department of Commerce. Their collection was finally discontinued early in 1924. Notwithstanding certain faults in the method by which these figures were collected, they possessed some distinctive merits, chief of which was that they were published, classified by major divisions of manufactures, for each of the 65 large cities in which they were obtained. For an evaluation of these figures, see Hurlin, Ralph G., "The Employment Statistics of the United States Employment Service," in *Journal of the American Statistical Association*, Vol. XVII, pp. 490-497, December, 1922.

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bureau to secure an "all-inclusive employment index."¹ In August, 1921 the Illinois Department of Labor began the collection of payroll data on employment. Its figures have covered manufacturing, mining, construction, trade, local traction, and telephone operation. In 1922 state departments in Iowa and Massachusetts were added to the list of bureaus collecting payroll statistics; Maryland was added in January, 1923. Iowa covered manufacturing, trade, and certain public utilities, and the other two states manufacturing only. In 1923 the Philadelphia Federal Reserve Bank began collecting figures for manufacturing for Pennsylvania, New Jersey, and Delaware, co-operating in Pennsylvania after the first few months with the state Department of Labor and Industry. In 1924 similar collection for manufacturing and mining was inaugurated by the Oklahoma Department of Labor and for manufacturing by the California Bureau of Labor Statistics. The San Francisco Federal Reserve Bank utilizes the data collected by the California bureau, and beginning also in 1924 has collected similar employment data for manufacturing in Oregon, where the state bureau co-operated in planning the inquiry but could not itself collect the information.

The Chicago Federal Reserve Bank began collecting payroll data on employment in a small way early in 1920. It expanded its collection of this information in the spring of 1921, when unemployment was at its height. This bank now utilizes employment data collected in its district by state bureaus where they are available, making independent collection in the other states. Employers' associations in Detroit, Cleveland, and Bridgeport also have long records of payroll employment data.

National figures for employment in each occupation on the railroads have been compiled monthly since 1921² by the

¹ Altmeier, A. J., "An All-Inclusive Employment Index for Wisconsin," in *Journal of the American Statistical Association*, Vol. XVIII, pp. 266-268, June, 1922.

² They were collected previously at quarterly intervals.

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Railroad Labor Board and the Interstate Commerce Commission in connection with other statistical data which are

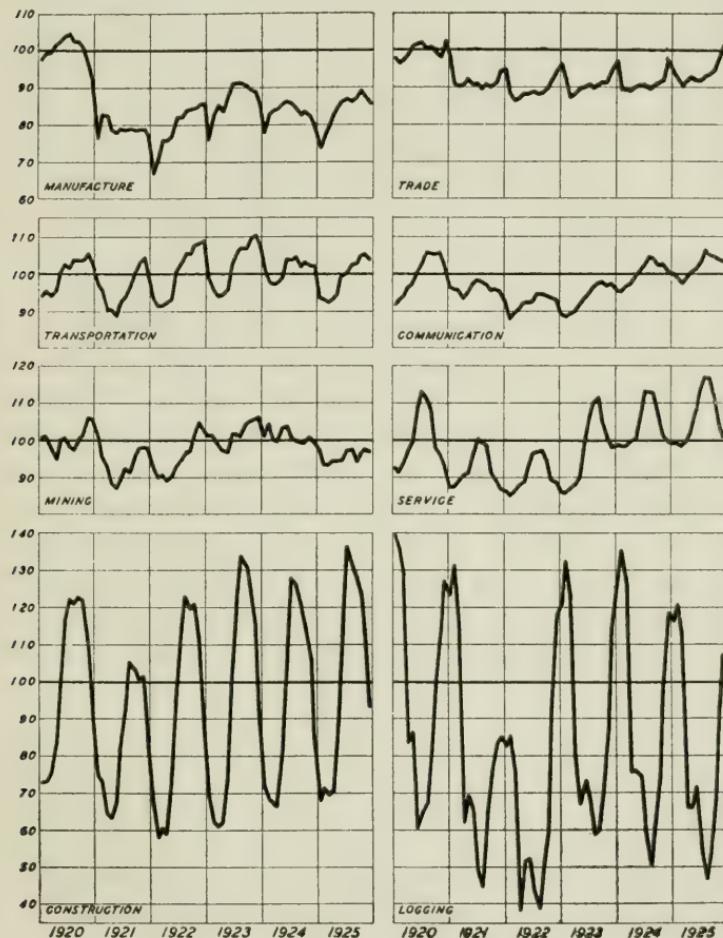


DIAGRAM 3.—INDEXES OF EMPLOYMENT IN EIGHT PRIMARY DIVISIONS OF INDUSTRY IN CANADA, 1920 to 1925

Base: 1920 average = 100

obtained for all Class I railroads, and the federal Department of Agriculture is carrying on a promising experi-

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ment in the collection of national employment statistics for farms.

In Canada the collection of comprehensive data on employment from payrolls was inaugurated in 1919 in connection with the establishment of a national system of employment exchanges. The Canadian Employment Service initiated these statistics, but their collection was later transferred to the Dominion Bureau of Statistics. All the major divisions of industry, except agriculture, in the entire country are covered.¹

Except in the United States, Canada, and South Africa, payroll statistics, as an indication of employment or unemployment, have not been systematically developed. Most European statistics of employment are derived from reports of unemployment of trade union members, or the operations of employment offices. In Great Britain, however, the Ministry of Labour has obtained over a long period of years employers' reports of numbers employed and amounts of wages paid for certain manufacturing industries, coal mining, longshore work, and some other occupations. For the mining industry similar statistics are collected in a few other countries.²

THE STATUS OF THE PLAN IN 1926

Thus, in the United States, the plan recommended was partially in operation when the committee began its work in 1922. The plan of co-operation between the federal Bureau of Labor Statistics and state bureaus was already in effect in New York and Wisconsin. Shortly thereafter, the sta-

¹ For a description of these figures, see Hurlin, Ralph G., "Canadian Employment Statistics," in *Journal of the American Statistical Association*, Vol. XVIII, pp. 615-622, March, 1923.

² For a statement of employment and unemployment statistics compiled in various countries, see International Labour Office: *Methods of Statistics of Unemployment—Report Prepared for the International Conference of Labour Statisticians*. Series N, No. 7, Geneva, 1925.

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tisticians representing Illinois and Massachusetts on the committee arranged for similar co-operation in their own states, and more recently the number of co-operating states has been increased to include Maryland and California. Other states collect the data, as shown in the table at the end of the chapter, but have not yet arranged for co-operation with the federal bureau.

Through co-operative collection in six states and independent collection in other states, the federal bureau covered in January, 1926 as many as 9,400 establishments in 53 manufacturing industries employing nearly 3,000,000 wage-earners, whose total earnings during one recent week were over \$75,000,000. The federal bureau's figures are now published in a special section of the *Monthly Labor Review*, which is issued as an advance bulletin,¹ with news releases sent out earlier, as promptly as the data are available. The data are given for the main industries and their subdivisions, and are then recapitulated for the nine geographical divisions used by the United States Census Bureau. It has not yet proved feasible for the federal bureau to publish the data for each state, or for federal reserve districts, which, it has been suggested, would make the data directly useful to the 12 federal reserve banks. All the collecting state bureaus, however, now publish their own data currently for local use.

Extension of employment statistics beyond manufacturing for these national figures has not yet proceeded far. The federal bureau is experimenting in the collection of data in the building trades, in metalliferous mines, and in coal mines. Summary figures for the railroads, furnished by the Interstate Commerce Commission, are included in the monthly report issued by the Bureau of Labor Statistics, but they are for earlier dates than the manufacturing statistics and are much delayed. The Department of Agriculture has con-

¹ *Employment in Selected Industries.*

TABLE 1.—LEADING BUREAUS IN THE UNITED STATES AND CANADA

Bureau	Date with which series begins ^a	Period in month to which figures refer
United States		
<i>Federal bureaus</i>		
United States Bureau of Labor Statistics	Dec., 1914	middle
Interstate Commerce Commission	July, 1921	"
Department of Agriculture	Oct., 1923	first
<i>State bureaus</i>		
New York Department of Labor	June, 1914	middle
Wisconsin Industrial Commission	July, 1920	"
Illinois Department of Labor	Aug., 1921	"
Iowa Bureau of Labor	Jan., 1922	end
Massachusetts Department of Labor and Industries	Sept., 1922	middle
Maryland Department of Labor and Statistics	Jan., 1923	"
Pennsylvania Department of Labor and Industry ^b	Jan., 1923	"
Oklahoma Department of Labor	Jan., 1924	"
California Bureau of Labor Statistics	May, 1924	"
<i>Federal Reserve Banks</i>		
Philadelphia ^c	Jan., 1923	"
Chicago ^d	May, 1920	"
San Francisco ^e	June, 1924	"
<i>Private bureaus</i>		
National Industrial Conference Board	June, 1920	"
Cleveland Chamber of Commerce	Jan., 1921	end
Detroit Employers' Association	Feb., 1920	(weekly)
Bridgeport Manufacturers' Association	Feb., 1921	(weekly)
Canada		
Dominion Bureau of Statistics ^f	Jan., 1920	first

^a In a number of instances data for all of the industries now being covered do not extend back to this date.

^b In connection with detailed reports of "employees, service, and compensation" for all Class I railroads.

^c The monthly data for Maryland are published also in the annual report of the Commissioner of Labor and Statistics.

^d In co-operation with the Federal Reserve Bank of Philadelphia.

^e Collects data for Pennsylvania, New Jersey, and Delaware. Data for each state are published separately in mimeographed reports.

WHICH COLLECT CURRENT MONTHLY PAYROLL STATISTICS

Information collected	Industries now being covered	Name of report
Employment and earnings	Manufacturing	Monthly Labor Review; also Employment in Selected Industries
Employment and earnings ^b	Railroads	Wage Statistics, Class I Steam Railroads
Employment and wage rates	Agriculture	No publication of these data has yet been made.
Employment and earnings, by sex, office and shop employees	Manufacturing	Industrial Bulletin
Employment and earnings, manual and non-manual employees	Manufacturing, mining, communication, transportation, construction, trade, logging, agriculture, etc.	Wisconsin Labor Market
Employment and earnings, by sex	Manufacturing, mining, communication, transportation, construction, trade	Labor Bulletin
Employment, by sex	Manufacturing, trade, etc.	Iowa Employment Survey
Employment and earnings, by sex	Manufacturing	Employment and Earnings (mimeographed)
Employment and earnings	Manufacturing	Printed table only ^c
Employment and earnings	Manufacturing, mining, street railways	Labor and Industry
Employment and earnings	Manufacturing	Oklahoma Labor Market
Employment and earnings	Manufacturing	California Labor Market Bulletin (mimeographed)
Employment and earnings	Manufacturing, trade	Business Review
Employment and earnings	Manufacturing	Business Conditions
Employment and earnings	Manufacturing	Monthly Review of Business Conditions
Employment, earnings, and hours, by sex, skilled and unskilled employees	Manufacturing	Occasional reports on Wages, Hours, and Employment
Employment, hours, wage rates	Manufacturing	Cleveland Business Statistics ^h
Employment	Manufacturing	Industrial Barometer
Employment, hours, man-hours	Manufacturing	Bulletin of Manufacturers' Association
Employment	Manufacturing, mining, communication, transportation, construction, trade, logging, etc.	The Employment Situation (mimeographed) ^j

^f Data represent the Seventh Federal Reserve District; in Illinois and Wisconsin they are obtained from state bureaus.

^g Collects directly from employers in Oregon; uses figures of state bureau in California.

^h Contains diagrams only.

ⁱ Collection taken over from Canadian Employment Service. Experimental collection was begun early in 1919.

^j Also published in the *Labour Gazette* of the Canadian Department of Labour.

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tinued experiments begun by the Wisconsin Industrial Commission on the difficult problem of collecting employment figures for farms, but the statistics are not yet currently available and do not appear in the inclusive report. Data on employment in wholesale and retail trade are not yet collected for the country as a whole, though they are being obtained by certain state bureaus, including Wisconsin and Illinois, and also by the Federal Reserve Bank of Philadelphia.

The Federal Reserve Board has co-operated effectively in the plan of the committee. It has discouraged the separate collection of employment figures by its affiliated banks, wherever the data are being made available by a governmental bureau in a form in which the banks can use them. The fact that only certain states now gather the data in accordance with the uniform plan creates a difficult problem for the banks. In Pennsylvania the Philadelphia Federal Reserve Bank collects the information as an agent of the state Department of Labor and Industry, but the federal Bureau of Labor Statistics has been unwilling to use the data collected by the bank, so that in the Third Federal Reserve District, including Pennsylvania, New Jersey, and Delaware, both the federal Bureau of Labor Statistics and the Philadelphia Federal Reserve Bank are collecting the same data on employment from employers in manufacturing industries. There is also double collection in the Seventh Federal Reserve District, where both the Chicago bank and the federal bureau collect the data in states in which state bureaus do not collect. It is this sort of duplication of effort which this committee seeks to eliminate.

In Table 1, an attempt has been made to summarize the important comparative information concerning the several series of payroll data on employment available in this country and Canada. It shows that payroll statistics are now being

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collected from month to month in the United States by three federal bureaus and by nine state bureaus, although only six of the state bureaus make reports to the federal bureau in accordance with the plan outlined in this report. In addition, employment statistics are being collected by three federal reserve banks and privately by a number of employers' associations.

Thus, in 1926, despite encouraging progress, the great majority of states have no information regarding employment within their own boundaries, although manufacturing plants in them may contribute to the data collected by the federal Bureau of Labor Statistics for the country as a whole. The more rapid extension of initial collection by the states and the inclusion of a larger number of industries are the two major needs in the effort to secure adequate statistics of employment in the United States.

CHAPTER II

THE USES OF EMPLOYMENT STATISTICS

THE plan for collecting employment statistics has a practical purpose. It is to prevent or, at least, to lessen unemployment by providing facts needed to understand and control fluctuations in the production of goods and obstructions to their sale. These interruptions in economic processes throw men and women out of work. Meanwhile, until unemployment can be diminished, facts are also necessary to guide local communities in lessening distress among wage-earners.

Unemployment is no vague abstraction of economic theory. The man or woman wage-earner, able and willing to work, but unable to find employment, goes through an experience which is always tragic. To be out of work and out of wages in an economic world in which the dollar earned is the only means of securing food, clothing, and lodging overwhelms the worker with a sense of personal failure and discouragement, frustrates his hope of maintaining and raising the standard of living of his family, and forces his children to begin wage-earning too early. The Greek conception of uncontrollable Fate shaping the individual life to predestined ends has its counterpart in the insecurity of modern industry whereby conditions far beyond the worker's control may suddenly deprive him of his livelihood, quite without regard to his own faithfulness or skill. The worker cannot, alone, control the security of his job. Equally helpless have been socially minded citizens and the philanthropic agencies. Every period of widespread unemployment produces the

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same dreary round of more or less futile efforts to give "relief" to those who cannot find work.

Though the crisis of 1921 found communities in the United States, on the whole, better informed and better equipped for wise relief than in earlier crises, experience in this period showed that fundamental control, if possible at all, can be exerted only by industry itself, reinforced to some extent by governmental policies. In appointing the Committee on Unemployment in New York City in 1914, Mayor Mitchel said: "There is a grave question before the City in dealing with the problem of unemployment. It cannot be met by public or private charity. It is a matter of business, commerce and industry."¹ That control must rest in business and industry was more definitely stated by the Committee on Unemployment and Business Cycles, following the President's Conference on Unemployment in 1921. In an introduction to the committee's report, Mr. Hoover wrote:

The report does not suggest panaceas or economic revolution but seeks to drive home the facts that the enlargement of judgment in individual business men as to the trend of business and consequent widened vision as to approaching dangers will greatly contribute to stability, and that the necessary information upon which such judgments can be based must be systematically recruited and distributed.

The investigation shows that many firms have pursued such policies and have come through the recent period of business disaster with success and stability and that ignorance of determinable facts accounts for the disasters to many others.

The whole problem belongs to a vast category of issues which we must as a nation confront in the elimination of waste if we are to maintain and increase our high standards of living. No waste is greater than unemployment, no suffering is keener or more fraught with despair than that due to inability to get jobs by those who wish to work.²

¹ New York City: Report of the Mayor's Committee on Unemployment. January, 1916, p. 7.

² Business Cycles and Unemployment. Washington, Government Printing Office, 1923, p. vi.

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If the plan for the gathering of nation-wide statistics which the Committee on Governmental Labor Statistics of the American Statistical Association advocates in this volume is carried out, we shall know each month for every important industry in the country, for every state, and for the more important cities and industrial areas within each state, whether the number on the payrolls and the total wages paid are less or greater than in the preceding month, in the preceding year, and at other periods significant for comparison. How will the possession of this information aid business and the community in mitigating the distress and ultimately removing the despair "due to inability to get jobs by those who wish to work"? In short, what do the facts mean and how useful are they in promoting ways to relieve distress and to control the seasons and cycles of unemployment?

CAN EMPLOYMENT STATISTICS MEASURE UNEMPLOYMENT?

When unemployment is widespread, the government is expected to know how many men and women are out of work. With the plan recommended by this committee in effect, will the government be in possession of the facts necessary to answer this simple, practical question?

A description of how the President's Conference on Unemployment in 1921 tried to determine how many persons were unemployed will throw some light on the use for this purpose of employment data derived from payrolls. When the conference met, a report prepared by an advisory committee was placed before its members.¹ The number out of work in the early part of September, 1921, according to the advisory committee's estimate, was 3,500,000, exclusive of laborers on farms. In August the Commissioner of Labor Statistics of the United States, Ethelbert Stewart, had prepared for Con-

¹ See "Excerpts from Report of the Economic Advisory Committee," in Report of the President's Conference on Unemployment. Washington, Government Printing Office, 1921, pp. 47-58.

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gress an estimate which placed the number of unemployed in July at 5,735,000. Payroll data from the employers' monthly reports to the Bureau of Labor Statistics, already discussed in Chapter I, showed an improvement in August and again in September as compared with July. On the basis of this improvement Mr. Stewart estimated that the number unemployed late in September, at the time the conference met, was 5,535,000, as compared with the advisory committee's estimate of 3,500,000 as of the beginning of the month.

In view of this discrepancy of more than 2,000,000, the Committee on Unemployment Statistics of the conference then proceeded to make an independent study of the available data. Its estimate was that between 3,700,000 and 4,000,000 persons had been laid off in various industries between January, 1920 and September, 1921. This committee sought to find out how many more wage-earners had been on the payrolls of the country's industries in January, 1920, when prosperity was at its height, than at the time of the conference.¹ In its report to the conference, the committee declared that it found itself without the data necessary for an accurate estimate of the number out of work. Yet it said, "the first step in meeting the emergency of unemployment intelligently is to know its extent and character."²

Because of the variety of information analyzed for the Conference on Unemployment, the material may be taken as affording a test of the uses of employment statistics as a means of answering the question, How many are unemployed? The fact that responsible statisticians, having the same data before them, differed by as much as 2,000,000, points to the inadequacy, or else the unreliability, of the

¹ It should be noted that all the estimates of the extent of unemployment here discussed were based on attempts to compare the number of persons employed at the height of employment in 1920 with the number employed in 1921.

² Report of the President's Conference on Unemployment. p. 39.

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available facts. Was this information inherently defective or was it simply insufficient in quantity?

Data Underlying the Conference Estimates.—The data which formed the basis of the varying estimates of the amount of unemployment which were placed before the conference included the following:

1. Results of a special survey of unemployment in 280¹ cities of the United States, conducted in September, 1921 for the President's Conference by the United States Employment Service of the federal Department of Labor, and of a previous survey made by the Employment Service in January, 1921 in which for 182 cities estimates of numbers unemployed at that time were obtained. These data were collected by nine district directors of the Service. For important or typical cities in each of these districts, estimates were obtained from "neutral bodies, State labor departments, State commissioners of manufactures, State and municipal employment services, workmen's compensation bureaus, employers' and employees' organizations, and all other sources competent to furnish authoritative information."² In addition to the data obtained in these special surveys, and in fact growing out of the January survey, was the series of current monthly data collected from employers in manufacturing industries in 65 cities.³

2. Monthly reports of numbers employed and total wages paid in selected manufacturing industries, collected by the federal Bureau of Labor Statistics.

3. Similar data for all manufacturing industries in New York State, collected by the New York State Department of Labor.

4. Quarterly reports by trade unions in Massachusetts of members unemployed, collected by the Massachusetts Department of Labor and Industries.

5. Estimates of reduction in employment in coal mining and in petroleum and natural gas production, based on data

¹ As given in Report of the President's Conference on Unemployment, page 48. The number is given as 240 in the Tenth Annual Report of the Secretary of Labor for the fiscal year ended June 30, 1922, page 30.

² Report of the President's Conference on Unemployment. p. 48.

³ These data are referred to on page 11.

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on output collected by the United States Geological Survey and the United States Bureau of Mines.

6. Monthly reports of numbers employed on steam railroads, collected by the Interstate Commerce Commission.

7. Preliminary tabulations of the numbers engaged in different occupations according to the census of population in 1920.

Estimate of the Economic Advisory Committee.—The advisory committee of the conference arrived at an estimate of 3,500,000 out of work by two processes. Its first estimate was obtained as follows:

1. The total number unemployed in September, 1921 in 280 cities, as found by the United States Employment Service, was 2,301,588. This constituted 6.5 per cent of the population of these cities (35,431,178) as recorded in the census of 1920.

2. Arranging these cities by geographical divisions, the committee found that the percentage of the population reported unemployed varied from a minimum of 2.9 in the Pacific states to a maximum of 8.3 in the Middle Atlantic states. The indications were that the extent of unemployment was greatest in the industrial states of the Middle West and the East.

3. Analyzing the figures by industries, the committee found that "miscellaneous industries" contributed 33.4 per cent of the total number reported as unemployed; iron and steel and their products 21.9 per cent; and the building trades 10.6 per cent. Textiles and their products contributed 8.6 per cent, and metals other than iron and steel 5.8, with other industries varying from 0.8 for tobacco to 3.7 for railroad repair shops.

4. Comparison was then made with the similar estimates of the Employment Service obtained for January, 1921 in the 173 cities which were covered in both the January and September surveys. The proportion of the population unemployed in January was found to be 5.5 per cent, as compared with 6.5 per cent in September. The Middle Atlantic states showed the largest increase in unemployment, from 4.9 in January to 8.3 in September.

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5. The committee then asked, "Are these data for selected cities representative of cities and towns of the country as a whole?" By way of answering this, a table was arranged comparing the proportion of the urban population resident in each geographical division with the proportion of population represented by the cities included in the survey of the Employment Service. It was found that similar proportions of urban population had been included in the survey in each district.

6. The committee further asked whether it was fair to gauge unemployment in smaller communities by estimates for urban centers. It was decided to estimate that 6 per cent of the population in places of 2,500 or over were unemployed, and 2.5 per cent in smaller places. To the smaller places were thus attributed 242,000 of the unemployed, and to the larger 3,258,000, making a total of 3,500,000 persons, not including unemployed farm labor.

By way of checking this first estimate based on the special surveys of the Employment Service by data from other sources, the advisory committee of the conference then proceeded to examine the monthly statistics of employment and earnings of the federal Bureau of Labor Statistics and the New York State Department of Labor, and the data on unemployment obtained from trade unions in Massachusetts. These three sets of data were found to be in substantial agreement with one another.¹ They were, also, found to be consistent with indexes of business conditions, production, the volume of bank clearings, and so forth.² They gave the following information concerning reduction of employment:³

¹ A fourth series was available, the monthly data collected by the United States Employment Service, beginning at the end of January, 1921, from identical manufacturing establishments in 65 industrial centers. They indicated a drop of 7 per cent in the first half of 1921. The committee could not reconcile this with the evidence from the other three series. Inspection suggested that this fourth series possibly gave "too much weight to industries and districts in which unemployment is particularly severe."

² The basis for this judgment was an analysis which had been made for the Harvard University Committee on Economic Research by William A. Berridge.

³ Report of the President's Conference on Unemployment. pp. 53-54.

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1. The factory employment index for New York State was 123 in January, 1920 and 88.5 in July, 1921, a decline of 28 per cent.

2. The index for 13 manufacturing industries then being covered by the federal Bureau of Labor Statistics declined in the same period from 106 to 82, or 23 per cent.

3. In Massachusetts the percentage of union membership reported out of work on December 31, 1919 for causes other than labor disputes and disability was 4.1 and a year later 29.9. The committee found that in the first six months of 1921 the situation had improved in Massachusetts. But making allowance for expected improvement due to seasonal fluctuations, it was estimated that the amount of decline in employment between January, 1920 and the middle of 1921, chargeable to industrial depression, was 31 per cent.

These percentages of decline could not be used to show the total number out of work in the country without further estimates. First, indexes for different industries were obtained from the New York and the federal data reported from the payrolls of employers in manufacturing industries. These were weighted according to the number of wage-earners in each industry, as shown by the census of manufactures, in constructing a composite index for manufacturing industries. The conclusion was that between January, 1920 and July, 1921 employment in manufacturing industries declined 26 per cent. The change between July and September gauged by such data as were available was assumed to be inconsiderable.

The number employed in manufacturing and mechanical industries in January, 1920 had to be ascertained in order to find out how many individuals were represented by the decline of 26 per cent. Preliminary tabulations of the census of 1920 for 24 states gave the basis for an estimate of approximately 12,000,000 persons engaged in these industries at the beginning of 1920, and 26 per cent of this number is 3,120,000. But not all of these 12,000,000 persons were on

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payrolls in January, 1920, since the number included everyone who had reported a manufacturing or mechanical occupation. Moreover, many were employed in small shops, which seemed likely to be less affected by cycles of unemployment than were larger establishments. Therefore, the advisory committee estimated the decline in employment in these industries as less than 3,000,000 and probably not more than 2,750,000.

For coal mines, using the data on production as a measure of declining employment, the number employed in August, 1921 was estimated as 250,000, or 23 per cent less than in August, 1920. For railways, the decrease in employment in June, 1921, as compared with January, 1920, was estimated as 445,000 or 21 per cent.

Putting these figures together, the advisory committee accounted for a reduction of approximately 3,500,000 in names on payrolls in the manufacturing and mechanical trades (including building), in mining, and in railway transportation, which corresponded with its estimate of unemployed persons based on the data of the United States Employment Service.

Estimate of the Commissioner of Labor Statistics.—It will be recalled that the Commissioner of Labor Statistics estimated the number unemployed in July, 1921 as 5,735,000. In this estimate the figure for manufacturing was based on the results of the January, 1921 survey of the United States Employment Service, supplemented by the currently collected data of the Employment Service for the first half of 1921. Independent estimates were made for other industries. The figures by industries are as follows: manufacturing and mechanical industries, including building, 3,900,000; mining, 250,000; transportation, 800,000; trade and clerical workers, 450,000; domestic and personal service, 335,000. For lack of available data no allowance

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was made for unemployment in agriculture or in public and professional services.¹

These figures referred "to the change in number of persons employed . . . , ignoring whatever of unemployment there may have been in the spring of 1920." Mr. Stewart pointed out, however, that at the peak of operations in 1920 employment was far above normal and, therefore, the reduction in the number employed was not necessarily made up entirely of persons accustomed to work for wages. In discussing his new estimate of 5,535,000, as revised at the time of the conference to allow for improvement in industrial conditions during August and September, Mr. Stewart estimated the number of normally unemployed persons involved in the reduction of payrolls (that is, the number of persons who had been recruited to industry from non-gainful pursuits for the period of the boom) as possibly reaching 1,500,000.

Final Estimate of the Conference.—The many differences between the figures of Mr. Stewart and those of the advisory committee came at points where estimates had to be made, and revealed the inadequacy of the available figures. Agreement was impossible on the guesses which were necessary. Were the industries represented by the monthly reports of the several bureaus collecting employment statistics typical of manufacturing industry as a whole? The census data gave no information on the building trades as a separate group, and neither the federal Bureau of Labor Statistics nor the New York State Department of Labor collected data on employment in building. Was it accurate to assume that the percentage of reduction in employment revealed in manufacturing industries could be applied to the building trades? Was the number out of work less than was indicated by the reduction in the number on payrolls?

¹ Congressional Record, Vol. LXI, pp. 5487-5490, August 16, 1921.

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Was there sufficient basis for the belief that in times of prosperity persons not usually employed are drawn into the larger industrial establishments from the country and from the less organized industries, and that when they are laid off in times of depression they are "absorbed" into their former occupations or find some other way of earning a livelihood?

The Committee on Unemployment Statistics of the Conference on Unemployment examined all the available data and considered the differences in estimates which had been made. It drew its own conclusion as follows: "The latest statistics available indicate that the number of unemployed at this time, measured in terms of the reduction since January, 1920 (twenty months ago), in the number of workers on payrolls, exclusive of agriculture, is not less than 3,700,000 or more than 4,000,000."¹

So many guesses, however, entered into the estimates that the conference itself rejected even this conclusion and merely voted to announce to the country that the number unemployed was between 3,500,000 and 5,500,000, numbers startling enough to challenge attention.

The meaning of these figures as a guide to the conference was (1) that the number was larger than could be accounted for by seasonal variations and other factors which produce idleness at all times; (2) that because the number unemployed was much larger than usual the ordinary resources of savings, family assistance, and local relief could not cope with the need for assistance; (3) that the greater extent of unemployment made the problem different "not only in degree but in kind." It was a national problem "demanding not only local relief measures, not only state and federal consideration, but concerted voluntary action of a preventive character on the part of employers"; and (4) that the situation in the coming

¹ Report of the President's Conference on Unemployment. p. 38.

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winter would probably be more serious than in 1907-1908 or in 1914-1915.¹ Thus, even though the information was unsatisfactory, nevertheless such employment statistics as were available had a practical purpose in pointing to the necessity for action by employers and by local communities.

The special value of the work of the Committee on Unemployment Statistics of the conference was its analysis of the weak points in the statistics then available. Its report on this subject was as follows:

Special surveys, such as those made by the U. S. Employment Service in January and again in September, 1921, are unsatisfactory for several reasons: (1) By virtue of their very character they cannot be carried on at monthly intervals, whereas there is need for a monthly measurement of the state of employment; (2) they take no account of that unemployment that takes the form of part-time employment, a form that is important in every depression and in every slack season and is being more and more extensively adopted as a policy at such times; (3) inspection of the returns reveals a large amount of reporting over the telephone and, as evidenced in the reporting of round numbers, in some cases of very round numbers, of reporting from vague and unverified memory, so that the results are open to the suspicion that they contain a large element of impressionism.

Unemployment indices based on a regularly monthly comparison of the number of employees and their earnings as shown by the payrolls of identical establishments in a mailing list that is large enough and well enough distributed among the various industries, among large, small, and intermediate establishments, and geographically to constitute a fair sample, are more dependable and satisfactory. Even these statistics are gathered by only two or three states. The chief defects of existing indices, such as those published by the U. S. Bureau of Labor Statistics and the Massachusetts and New York bureaus are:

1. They are confined to manufacturing and mechanical industries. They should be extended to include all forms of transportation, trade, and mining and quarrying.
2. They entirely ignore part-time employment.
3. They make no attempt at a statistical measurement of the changes

¹ From unpublished (multigraphed) portion of Report of the Economic Advisory Committee.

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in average wage and salary rates, and therefore afford no satisfactory basis for statistically estimating the wage losses in cyclical and seasonal depressions, particularly where there is a change from one level to another.¹

Employment Statistics and the Measurement of Unemployment.—Most of the data used in the estimates prepared for the Conference on Unemployment related to employment, not to unemployment. They established the dates of changes and the severity of changes in numbers employed in selected areas and establishments. How many were actually out of work in any locality, or in any industry, or in the country as a whole, could not be precisely deduced from information which showed the changes in a selected group of payrolls in certain industries.²

To the question, Will employment statistics measure unemployment? the answer must be negative. This conclusion is confirmed by a significant study made by Professor A. L. Bowley in England some years ago. Professor Bowley constructed from the data on numbers employed by firms in various industries, obtained and published currently by the British Labour Department,³ an index of employment. This he compared with the index of unemployment of the Labour Department, constructed from data on unemployment in trade unions, and with other recorded evidences of changes in employment. From his analysis of this new index of employment Professor Bowley drew this conclusion:

It is indeed primarily an index rather than a measurement. At the dates at which employment (using the word in an undefined general sense) improves the index rises, as trade becomes slack it falls; it is sensitive to changes in all the important industries where production or other work is systematised and on the large scale (except railways), and

¹ Report of the President's Conference on Unemployment. p. 40.

² Only a house-to-house canvass can reveal the number actually out of work, and such an inquiry is fraught with difficulties. It is necessary to define the meaning of "unemployed," and to apply the definition to the individual. Moreover, the whole undertaking is very costly if it is extensive enough to yield conclusive information. For discussion of statistics of unemployment, see page 51.

³ Previously referred to on page 14.

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is governed most by those which are numerically the most important. It returns to the same point when employment in every industry or in industries averaged together returns to the same condition. When the condition of employment changes greatly the index moves violently, while slight alterations are shown by small movements. It cannot, however, be affirmed certainly that its movements are directly proportional to those of any defined meaning of "amount of employment," whichever factor we consider, whether number employed or average amount of time or work of those employed. It is mainly based on the factor "number employed," but even its constituents of this kind are not all directly proportional to this number; it is partly based on the amount of working time of those at work. Its resemblance to the Labour Department's number suggests that it measures more closely the number employed than the amount of work. It is certain that the amount of work must have wider fluctuations than the number employed, and pending further investigation it may be suggested that the fluctuations in the two factors over the whole of industry are of about the same importance, one as the other. . . .

The number is not a measurement of unemployment the index is not influenced by, and does not in any way measure, the number of persons who have permanently fallen out of, or never been in, work.¹

The rough estimate of the total number unemployed in the United States which was announced by the President's Conference on Unemployment served the purpose of gaining the attention of the country. It was the text, so to speak, for urgent recommendations of the conference, such as: that local committees should take action to relieve distress; that business men should adopt policies to give work in the crisis; and that federal, state, and municipal governments should give attention to the timing of public works, the organization of employment bureaus, and other measures designed to stimulate the recovery of business from depression.²

The mere statement of these recommendations shows that, having been stimulated to action by an estimate of the size of

¹ "The Measurement of Employment: an Experiment," in *Journal of the Royal Statistical Society*, Vol. LXXV, p. 819, July, 1912.

² Report of the President's Conference on Unemployment. pp. 19-23.

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the problem, those who must act need more precise information. The kind of employment statistics needed depends upon their uses. Broadly speaking, the experience of the United States in the crisis of unemployment in 1921 seemed to show (1) that facts about *unemployment* are needed primarily as a guide for programs of relief, and that for this purpose they must relate to particular communities, since the alleviation of distress can best be achieved in the locality where it is found; and (2) that facts about *fluctuations in employment* are needed as a guide for controlling policies in industry and elsewhere, and for light upon problems of the business cycle and of waste in industry. For these purposes the facts concerning employment are needed for different communities, for particular industries, and for individual establishments.

THE STATISTICAL BASIS FOR RELIEF OF UNEMPLOYMENT

Before considering the problems of business to which employment statistics apply, a word must be said of their bearing upon the programs of social agencies in periods of unemployment. What kind of information is needed, and for what purposes, was revealed in the experience of American cities in attempting to aid the unemployed in 1921. After a careful study of 15 of these communities made for the Russell Sage Foundation by Philip Klein, definite conclusions were reached regarding the relative merits of counting the unemployed as compared with continuous study of employment conditions in local communities. His finding was that "Any direct count of the number of unemployed persons has proved entirely impracticable. . . . The important thing to know . . . is not the exact number of unemployed at any time, but rather the chances of employment . . . Any machinery for obtaining relevant and valuable data should, therefore, be directed toward the scrutiny of

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fluctuations in the extent of employment and the observation of available indices of distress among the working population."¹ Many "available indices" of the economic condition of the working population are illustrated in this study by concrete data obtained in the cities investigated.

In the early fall of 1920 the curve of employment published by the New York State Department of Labor² declined rapidly, whereas comparison with preceding years indicated that revival might have been expected after seasonal depression in the summer months. That the curve failed to rise seemed to show that unusual influences were depressing business. For social agencies this should have been, as Mr. Klein said, a signal for action. The first step was to find out whether the experience of New York State was true of one's own community. Subsequent study showed that the depression reached its greatest severity at widely different times in different communities. For instance, New Bedford, Massachusetts, suffered most in the winter of 1920-1921, and Cleveland, Ohio, in the winter of 1921-1922.³ The prevailing industry in New Bedford is the manufacture of cotton goods, and in Cleveland iron and steel.⁴ The depression affected the cotton industry earlier than iron and steel, and the former was in fact reviving in 1921 while the latter was reaching its lowest point.

¹ *The Burden of Unemployment—A Study of Unemployment Relief Measures in Fifteen American Cities, 1921-1922.* New York, Russell Sage Foundation, 1923, p. 213.

² It will be recalled that at that date only two states, New York and Wisconsin, were publishing employment statistics, and Wisconsin had just begun, in July, 1920. The national data were exceedingly limited. Because of the diversity of industries in New York State, statisticians have regarded the New York data as fairly representative of manufacturing industry generally.

³ *The Burden of Unemployment.* p. 198.

⁴ It seems to be true that, lacking a local index of employment, the best guide is the index of the prevailing industry in the community, even if it is based on facts for the industry as a whole, without particulars for the given locality. In other words, given the industrial composition of a community, and given an adequate national index of each industry represented in it, a fairly accurate picture of the local trend in employment may usually be drawn.

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But declining employment and an increase in the number unemployed do not at once result in appeals to social agencies for relief. First, working people help themselves and one another. Shifts from one occupation to another, removal to another locality, use of credit and of savings, and pawning

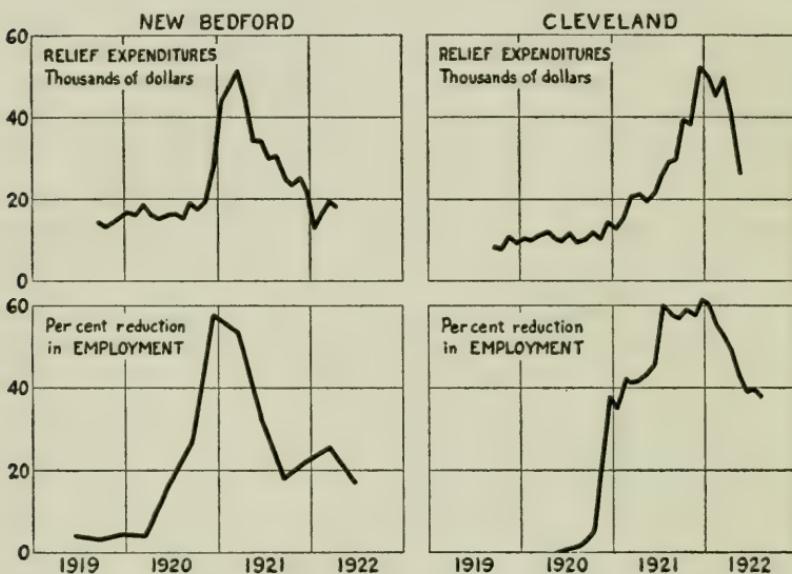


DIAGRAM 4.—RELATION OF UNEMPLOYMENT AND EXPENDITURES FOR RELIEF DURING THE DEPRESSION OF 1921-1922 IN TWO AMERICAN CITIES

For New Bedford, the relief expenditures are those of the Overseers of the Poor, and the employment curve represents returns of trade unions as reported by the Massachusetts Department of Labor and Industries. For Cleveland, expenditures are those of the Associated Charities, and the employment curve is based on data for 50 firms obtained by the Chamber of Commerce.

are some of the means used to tide over a wageless period. The ability of wage-earners to meet the crisis of unusual industrial depression depends largely upon the regularity of their employment in the months preceding the emergency. The relatively high earnings and steadiness of work during

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the World War and immediately afterwards postponed considerably the need of relief in 1921 in many communities. Yet Diagram 4, which is here reproduced from *The Burden of Unemployment*, shows a striking relation between the trend of employment and the trend of relief in the two cities just mentioned.

The exhaustion of the resources of the wage-earners themselves is reflected in various aspects of community life, and these were suggested by Mr. Klein as available indexes of distress, which he believes should be studied as a guide for constructive action. Distress is shown when applications to the family welfare society increase because of unemployment and when the society's expenditures for material relief begin to mount; when the visiting nurses are called upon more frequently and the free service of hospitals and dispensaries is demanded by more and more persons; when homeless men seek shelter in larger numbers; when more families ask the humane societies to find homes for their children; when help-wanted advertisements in the daily papers decrease and advertisements of apartments and houses for rent increase; when applications for work at public employment offices mount higher and jobs offered fall; when the number and the amount of small loans increase; and when evictions, foreclosures of mortgages, and business failures are pictured in rising curves.

To show in detail the use of these facts, would necessitate an analysis of community action in the emergency of unemployment which is beyond the scope of this book. The two following paragraphs may be quoted, however, as illustrating the importance of knowing the facts in order to lessen distress:

The winter of 1921-22 showed many instances where lack of previous study and preparation *in time* resulted seriously. In St. Paul the provision of facilities for the care of the homeless came in January, more than two months too late and therefore inadequate; in Minneapolis provision

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was made in December in great haste, so that no satisfactory work test system could be devised for the men cared for; in Chicago appropriations for the Municipal Lodging House were made at the tail-end of the winter of 1921-22, so that the institution was not reopened; in Philadelphia the tardiness of appropriations by the city and the unavoidable delay in the gift of a private fund received in February by the Society for Organizing Charity caused suffering to families long in want and extraordinary difficulties to the social agency; Boston social agencies were short of funds. . . .

On the other hand, those committees that had been organized a reasonable length of time before the onset of the stress of 1921-22 were able to plan and carry on some activities of a very creditable nature. The Mayor's Committee in Hartford, the Welfare Federation Committee of Cleveland, the Unemployment Conference of Chicago, the Industrial Aid Bureau of New York, came about as a result of movements initiated months or even a year before the autumn of 1921-22 and before the meeting of the President's Conference. The Hartford municipal employment work, the Cleveland Community Chest's unemployment emergency fund, the several activities fathered by the Unemployment Conference of Chicago, and the shelters for homeless men conducted in New York could never have accomplished a tithe of what they did if they had had to rush in in October or November. By anticipating the winter's emergency they were able to plan specific measures and to carry them through. Had there been committees in the cities enumerated so devised as to make possible a comprehensive preliminary survey and a checking up of specific activities, really statesmanlike control of the situation might have been possible.¹

Meanwhile, behind all the experience of local communities is the closely interwoven economic life of the country as a whole. Facts about the larger background of conditions are needed for local action. Without them an intelligent forecast of the future or even an appraisal of the significance of the present is impossible. Thus, the social problem of relief of distress due to unemployment requires comprehensive statistics showing changes in employment. Employment statistics are really more useful as well as easier to gather than are facts about unemployment. The uses of these sta-

¹ *The Burden of Unemployment.* pp. 42-43.

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tistics to alleviate hardship in a community, however, require that they be available currently for local communities and not merely for a state or the nation as a whole.

THE CONTROL OF THE BUSINESS CYCLE

Failures in business, and suffering among wage-earners in 1921 had one good result. They directed attention, as never before, to the possibility of preventing unemployment by lessening the wide sweep of fluctuations which has come to be known as the business cycle. The advisory committee of the President's Conference on Unemployment declared that "business managers and financiers . . . will increasingly think and plan in terms of the business cycle."¹ On the whole this prophecy has been fulfilled in the fairly even course of business maintained after 1921.

Writing on "The Interpretation of the Index of General Business Conditions,"² W. L. Crum, director of the Statistical Laboratory of the Harvard Economic Service, described the course of economic activity following 1921 as the "regulated business cycle." He finds a chief factor in this stabilization of business to be the control of the credit market by the Federal Reserve System through the use of "(a) publicity, (b) changes in rediscount rates, (c) open-market operations." The effectiveness of regulatory measures has been furthered by our large holdings of gold, the improved efficiency of transportation, and, perhaps most important of all, "the marked responsiveness of business sentiment."³

How this sentiment could be stimulated to steady business was illustrated when "early in 1923 there began to appear in

¹ From unpublished (multigraphed) portion of Report of the Economic Advisory Committee.

² *Review of Economic Statistics*, Vol. VII, Supplement 2, September, 1925.

³ *Ibid.* p. 232.

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some quarters the buoyant spirit which had been widely manifest in 1920."¹ Advance buying of basic materials, brisk rise in prices of commodities, and excessive expansion of production of raw materials which was not balanced by the production of consumption goods all gave signs of a boom which might be expected later to be followed by depression and unemployment. This did not occur because:

. . . responsible public officials and recognized business leaders took occasion, early in 1923, to sound a vigorous note of warning. In March Secretary Hoover recommended postponement of non-essential government construction work, and in May the governors of the American Construction Council gave much more general cautionary advice. Leading banking institutions published statements which were interpreted as urging restraint and favoring a retardation of the expansion then in progress. Moreover, in February and March, the federal reserve bank rediscount rate at the New York, Boston, and San Francisco banks was raised from 4 per cent to 4½, with a consequence that further tightening occurred in commercial money rates. The current speculative boom was brought sharply to an end, prices in the stock exchange declined sharply, and business activity and wholesale commodity prices experienced a rather severe recession which extended for several months.²

Control of credit by the banks, and the response of business men, which alone makes control effective, depend upon a fact basis for decisions. Evidences are many that dependable information about economic conditions is increasingly available and that business men, including bankers, manufacturers, and merchants, are using the facts.

In the roster of statistics needed here, what place have data on employment and earnings? The answer in a sentence is that changes in the numbers employed reflect changes in activity in business, and that changes in total wages—provided the rates of wages have not been altered generally—confirm the evidence of change in activity and give also an index of increase or decrease in the income of wage-earners.

¹ *Review of Economic Statistics*, Supplement 2, September, 1925, p. 228.

² *Ibid.* p. 229.

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Thus Diagram 5, which illustrates the relation of the amount of the payroll and the number of employes in factories during the recent period including the depression of 1920-1921, gives a useful picture of the fluctuations in business conditions and reflects the economic position of the wage-earning population.

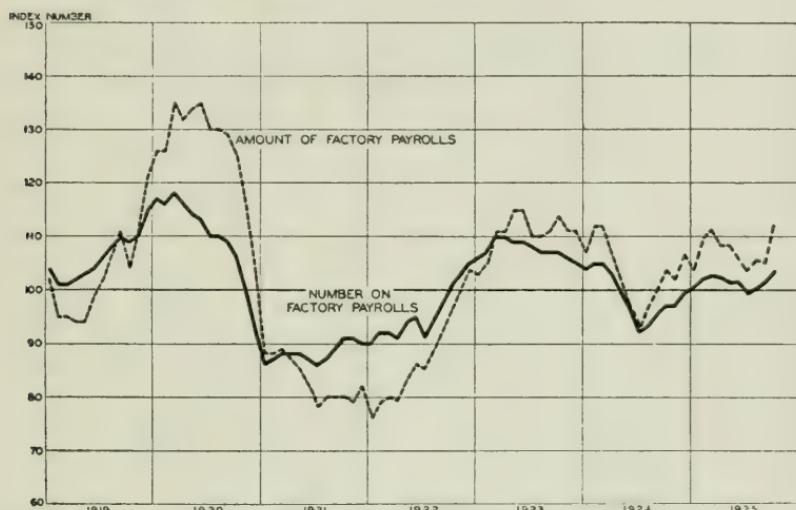


DIAGRAM 5.—INDEXES OF FACTORY EMPLOYMENT AND EARNINGS OF FACTORY WORKERS IN THE UNITED STATES

Base: 1919 to 1922 average = 100

For the method of constructing these indexes, see *Federal Reserve Bulletin*, Vol. IX, pp. 1272-1279, December, 1923 and Vol. XI, pp. 324-330, May, 1925.

A chief advantage of employment statistics as a measure of economic activity is that they afford a measure common to all business. One can count the number employed and so register changes alike in a cotton mill and an automobile factory, a department store and a bank, in a restaurant and on a farm. Data on production, when available at all, require widely different units of measurement, and data on value of products are confused by changes in the buying

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power of a dollar. The number of workers on payrolls is a measure applicable over long periods of time and in a variety of branches of business. In addition, a change in numbers employed is a forecast of change in activity and registers it slightly in advance of fluctuation in production. The laying off or the taking on of workers is advance notice of contraction or expansion of business.

Employment statistics give some basis for forecasting, and constitute raw material for study of the whole problem of fluctuations, both seasonal and cyclical, in industry and commerce, although they alone do not afford sufficient data for the study of these problems. Their first and most important use is, obviously, to measure increase or decline in numbers employed. They measure, also, with some precision the expansion or contraction of production and for this purpose they make comparison possible between industries. This comparison frequently affords a clue to danger. If, for instance, they reveal that raw materials are being produced in increasing volume without a corresponding increase in the manufacture of goods for the ultimate consumer, the danger that manufacturers may be overstocked with basic materials is indicated. But a change in employment or production is not in itself significant of either sound or unsound conditions. The relationships among many measures of business conditions must be established to bring out a meaning which no one of them alone can have.

QUESTIONS ILLUMINATED BY EMPLOYMENT STATISTICS

The whole investigation of fluctuations in employment, their causes, their effects, and the methods of control, is in its beginnings. It is impossible to demonstrate fully, on the basis of studies already made, the usefulness and the significance of statistics of employment and earnings as material for research on this important subject. Moreover, the im-

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portance of these data as guides in current economic policy has not been adequately tested. It is possible to suggest the questions on which they are likely to throw light.

The questions will be clearer if we have in mind first the different types of users of the data. These may be grouped as follows:

a. Managers of Business Establishments.—The manager of a business must reach decisions regarding the proper rate of

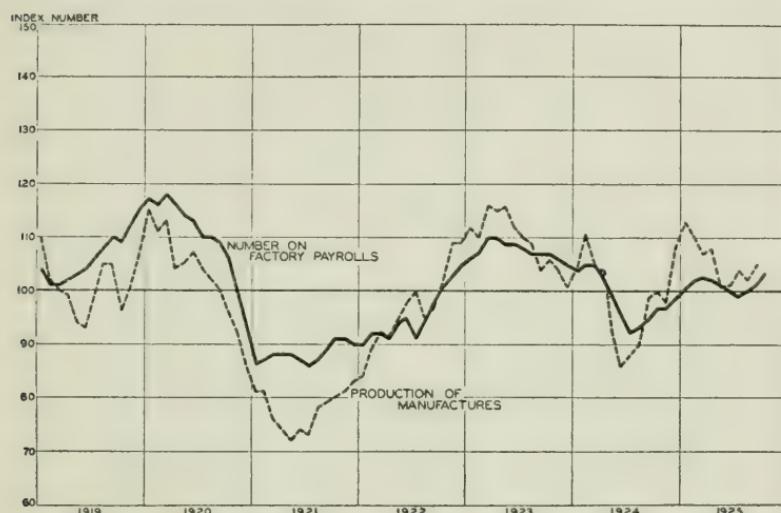


DIAGRAM 6.—EMPLOYMENT AND PRODUCTION IN MANUFACTURING INDUSTRIES

Employment base: 1919 to 1922 average = 100

Production base: "normal" = 100

The production index is that of Edmund E. Day. The employment index is the same as that shown in Diagram 5.

production in his plant during a given period of time, if he be a manufacturer, or the volume of his trade, if he be a distributor; the proper distribution of his own costs of doing business; the right time to buy and the right price to pay for his raw materials or the goods in which he deals; the need for expanding or contracting or leaving unchanged his

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equipment and capitalization; and, as the key to all these other decisions, the expected requirements of purchasers, the kinds of goods desired, the time of sale, the probable selling price, and the communities in which he will sell.

The trend of employment and earnings, if available for different industries and for particular communities, would enable him to compare his own plant with others in his own industry and his own city; to have an index of activity in the industries from which he buys, and in those businesses to which he sells, if he deals in production goods; and finally, if he deals in consumption goods, to have some knowledge of the purchasing power of the ultimate consumer in the communities where he makes his sales, or where the goods into which his product enters are ultimately sold.

Besides reaching current decisions, he will seek to develop enlightened policies in regard to employment in his own plant, and to eliminate wasteful fluctuations in his labor force. Data on employment and earnings in other plants afford a background for study of his own labor problem.¹

b. Financiers.—That the control of credit is, perhaps, a key to the control of the business cycle has already been suggested. What the manager of a business must know about trends in his own business, in his own industry, and in allied branches of business, and about changes in purchasing power, the financier must know for all business.

c. Governmental Officials.—In timing public works, in attempting to regulate supply and demand in the market for labor through public employment exchanges, and in determining governmental policies of finance and administration, the governmental official must have before him the same facts that are required by business managers and by financiers.

¹ For evidence of constructive and encouraging progress made by managers of industry in lessening irregularity of employment, see Feldman, H., *The Regularization of Employment—A Study in the Prevention of Unemployment*. New York, Harper and Brothers, 1925.

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The governmental official must also be sufficiently informed to stimulate a community to prepare for relief of the unemployed if the business men and the financiers have not succeeded in preventing unemployment.

Finally, in administering workmen's compensation laws and in campaigns to prevent industrial accidents, measurement of the trend of employment is an important factor in the accurate determination of accident rates in different industries. Employment data derived from payrolls are of peculiar technical value as a basis for establishing accident rates in various industries and occupations and hence for determining accident insurance rates. Similarly, they are needed to establish unemployment insurance rates.

d. Social Workers.—The need for these data as a basis for preventing suffering due to unemployment has already been discussed.

e. Economists and Statisticians.—If progress is to be made in bringing about control of fluctuations in employment, searching analysis of the time and severity of changes in employment and earnings (precisely the facts measured by these current statistics) must be carried on by research workers. The relations between changes in employment and the general prosperity of industry must be traced. The trends in different industries and their relationships to one another must be analyzed. These relationships offer a wide field for economic and social research.

Three important questions are now being answered currently by means of employment data regularly collected by governmental bureaus in the United States. These questions are:

1. What is the present condition of business?

Illustrative statements might be taken from any of the monthly reports enumerated in the table at the end of

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Chapter I. It is sufficient, perhaps, to recall that these various reports are giving a factual basis for the answer to this question not only in general, but concerning particular industries and, in several states, concerning particular cities.

Diagram 3, page 13, giving trends of employment in different industries in Canada from 1920 through 1925, shows how great are the differences in various groups of trades and how important it is to go deeper than general summaries in answering this question.

2. What is the condition of business likely to be in the immediate future?

Into most of the present decisions of business men, prophecy must enter, for their sales in the future will be the test of their policies of today. To appraise the possibility of forecasting is not the purpose of this chapter.¹ Suffice it to say that if forecasting is as necessary as its present popularity indicates, and if it can be made increasingly scientific, as statisticians seem to be demonstrating, then statistics of employment and earnings are important elements in the basic analysis. Considerable though far from perfect agreement between curves forecasting general business conditions and the curve of employment has been found.²

3. What is the purchasing power of the wage-earning population in given communities?

Upon the answer to this question depend many decisions as to the rate of output of industry, the purchase of raw materials, and the extension of plants. Bad guesses have been

¹ For a comprehensive treatment of this subject, see Pollak Foundation for Economic Research: *The Problem of Business Forecasting* (Edited by Persons, Foster, and Hettinger). Papers presented at the eighty-fifth annual meeting of the American Statistical Association, December, 1923. Boston, Houghton Mifflin Company, 1924.

² See for example Chapter IV of *Business Cycles and Unemployment—Report and Recommendations of a Committee of the President's Conference on Unemployment, Including an Investigation Made under the Auspices of the National Bureau of Economic Research*.

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responsible in the past for much of the expansion which has led to individual failures and sometimes, if the failures are widespread, to general business depression.

How accurately the monthly payroll statistics of employment and earnings reflect changes in purchasing power is a subject requiring much more careful analysis than has yet been given to it. In a study of business profits, made under the auspices of the Pollak Foundation, figures are charted showing a "close correlation between a decline in factory employment and a decline in the volume of trade."¹ It has also been found that a generally useful index of consumers' buying power can be constructed from the monthly data now available for employment and earnings in factory industries.² Significant studies for separate localities, however, cannot be made until employment statistics are extended and perfected and the data made available for small industrial areas.

PROBLEMS FOR RESEARCH

What are the types of problems for which perfected statistics of employment and earnings are needed? Probably no subject of economic research is at present attracting more attention than the problem of fluctuations in business. Wesley C. Mitchell, whose work on business cycles has been so fruitful, has found this problem to be a branch of the whole intricate and little explored "relation between business and industry, between making money and making goods, between the pecuniary and the technological phases of economic life." Much of the data for the study of the problem will consist, he says, of two great groups of time series:

¹ Foster, William Trufant, and Catchings, Waddill, *Profits*. Boston, Houghton Mifflin Company, 1925, pp. 381-382. The index of the volume of trade is from the Federal Reserve Bank of New York and the employment index is the one for factory employment devised by William A. Berridge.

² Berridge, Winslow, and Flinn, *Purchasing Power of the Consumer—A Statistical Index*. Chicago, A. W. Shaw Company, 1925, pp. 3-120.

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One group shows variations in the output, stocks, shipment, or orders for economic goods expressed in physical units—bushels, pounds, yards, ton-miles, *names on payrolls*, hours of work, accident rates, *labor turnover*, and so on through a list that will grow with the growth of statistics. The second group of time series shows variations in quantities expressed in monetary units. . . . Out of this technical characteristic of the statistical data we may expect to come a close scrutiny of the relations between our pecuniary institutions and our efficiency in producing and distributing goods.¹

This quotation may be taken to indicate the possible contribution of economic research to the prevention of unemployment. Seasonal and cyclical fluctuations in business have been so closely intertwined with unemployment that investigators have concluded that control of these fluctuations in business is the only fundamental way of insuring steady employment for wage-earners. Statistics of employment and earnings are among the measures of fluctuations in business which give current warnings and also afford the data for research. But, unlike other economic indicators, the facts about steadiness of work and wages measure the extent to which the social objective to be gained by curtailing the rise and fall of business, namely, economic security for wage-earners, is being attained.

¹ "Quantitative Analysis in Economic Theory," in *American Economic Review*, Vol. XV, p. 7, March, 1925. Presidential address at thirty-seventh annual meeting of American Economic Association, December, 1924. (Italics are ours.)

PART II
METHODS

CHAPTER III

SOURCES OF EMPLOYMENT STATISTICS

STATISTICAL measurements of employment are obtained from three main sources: (1) counts or estimates of the number unemployed; (2) statistics of demand for labor and applications for work as registered in employment bureaus; and (3) periodic counts of the number of persons employed as shown by payrolls. The Committee on Governmental Labor Statistics believes that payroll statistics are by far the best for most of the purposes enumerated in Chapter II, and attention is chiefly confined to that type of employment statistics in this report. But before passing to an intensive discussion of the methods of gathering and handling payroll statistics, it will be useful to indicate the reasons for recommending their collection in preference to others, by describing the three main sources of facts on employment or unemployment.

DATA ON UNEMPLOYMENT

Unemployment data may be obtained (a) by general estimates of the number unemployed in various localities made by selected persons known or supposed to be in touch with the employment situation in those localities; (b) by estimates or counts of the number unemployed among members of trade unions; (c) by actual enumeration of the unemployed in a house-to-house canvass; or (d) through registration of unemployed persons.

a. Estimates of Numbers Unemployed.—Serious attempts to determine the number of unemployed persons have some-

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times been made by responsible authorities from estimates collected at large from social workers, clergymen, poor-relief administrators, employers, labor leaders, and others. As an example, the two special inquiries made by the United States Employment Service in 1921 through its correspondents in numerous cities of the United States may be cited. From a large number of such estimates returned by its correspondents, it sought to derive a practicable estimate of the number of unemployed persons in the entire United States, but the results were of necessity inconclusive. Obviously such estimates, like the data upon which they are based, are little more than guesses. They should not be regarded as a reliable type of statistics.

b. Trade Union Statistics.—Unemployment statistics obtained from trade union sources are monthly or sometimes quarterly figures, commonly reported by the secretaries of various local unions, and usually expressed in the form of "percentage of members unemployed." In this country, New York and Massachusetts are the only states which have had extended experience with trade union reports of unemployment. In both New York and Massachusetts their collection was discontinued soon after the current collection of employment statistics from representative manufacturing establishments was begun.

One criticism of these figures is that trade union secretaries are not equally capable of determining the number of unemployed members of their respective unions. Comparatively few unions in the United States have records which directly furnish the information desired. In the few unions in this country which pay benefits or remit dues to members who can show that they are out of work, the information is likely to be obtainable from actual records; but usually the secretary is under the necessity of making an estimate, the accuracy of which varies with the intimacy of his knowledge of the mem-

SOURCES OF EMPLOYMENT STATISTICS

bers, and depends, therefore, upon the size of the union, the geographical distribution of the membership, and a variety of other factors. Collecting bureaus have found difficulty in securing prompt and regular information from trade union officials. It was partly on this account that the New York and Massachusetts bureaus abandoned their series of reports from trade unions on unemployment in favor of payroll statistics. The attempt made by the American Federation of Labor, during the decade 1899 to 1909, to establish through such reports a national record of unemployment among union members failed because the Federation could not obtain regular and satisfactory returns from unions.

Despite the difficulties in collecting unemployment statistics of this type, those obtained in New York, Massachusetts, Canada, Great Britain, and elsewhere¹ have considerable merit. Although this committee considers these statistics distinctly more difficult to collect and less valuable for general purposes than payroll statistics, it favors their collection, because among other reasons they afford a valuable check upon other data on employment. Analysis has in fact strikingly demonstrated that such data agree very closely with the data from payrolls in showing the course of employment. This may be seen, for example, in Diagram 7.² Trade union unemployment data also have the advantage that they can be reported for clearly defined occupations, whereas data on unemployment from some other sources cannot.

A brief description of the methods used in obtaining figures

¹ Trade union statistics of unemployment are assembled and published periodically in the *Monthly Bulletin of Statistics* of the League of Nations from the following countries: Australia, Canada, Denmark, Germany, Great Britain, Norway, Sweden, together with other types of unemployment data for various European countries.

² See also Berridge, William A., *Cycles of Unemployment in the United States, 1903-1922*. Boston, Houghton Mifflin Company, 1923, pp. 22-25, 40-42. Appropriately weighted index numbers compiled from the two sorts of data and corrected for seasonal variations are compared. The high coefficients of correlation obtained by Berridge confirm the impression obtained from inspection of the curves in Diagram 7.

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from unions in Massachusetts will indicate more clearly their nature. They were obtained quarterly, by mail, from local unions by the Division of Statistics of the state Department of Labor and Industries. The report was made on a printed form sent by the bureau to the secretary of the union each quarter shortly before the returns were due. The schedule¹

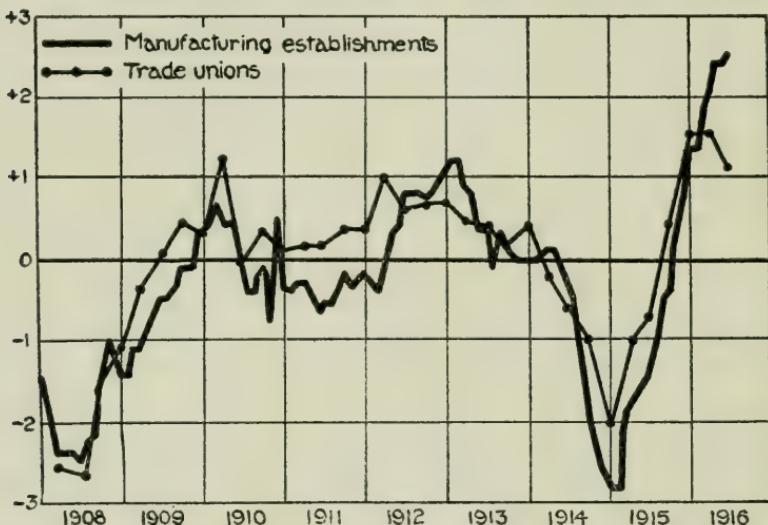


DIAGRAM 7.—EMPLOYMENT CHANGES IN MASSACHUSETTS FROM 1908 TO 1916 AS DETERMINED FROM DATA OBTAINED FROM TRADE UNIONS AND FROM MANUFACTURING ESTABLISHMENTS

The data for this diagram are taken from Berridge, William A., "Employment and the Business Cycle," in *Review of Economic Statistics*, Vol. IV, p. 24, January, 1922.

called for the name and location of the union, the total membership, and the number of members *entirely unemployed* on the date of the report, classified by sex and grouped under the following causes of unemployment: lack of work or material; unfavorable weather; strike or lockout; sickness, accident, or old age. From these data, percentages of unem-

¹ This is reproduced in the Appendix, page 202.

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ployment were calculated. Because the number of organizations having women members was small, tabulation by sex was not made, except occasionally in answer to special inquiries. The data were tabulated and published¹ by cause of unemployment, by city, by industry, and by occupation—both actual figures and percentages being shown.

At the outset requests for co-operation in gathering these statistics were sent, by mail, to all the local unions in the state, and 256 (about one-fifth) of the total number responded. Considerable work on the part of field agents was necessary to stimulate reporting and to improve its quality, but it was not found necessary to enlist the help of labor leaders or to undertake any special campaign of persuasion in order to inaugurate the collection of the data. The number of unions co-operating increased from year to year, and at the time of the discontinuance of these reports, returns were being received from more than 1,000 unions, having an aggregate membership of over 220,000. They represented approximately three-fourths of the trade union membership and about 15 per cent of the entire number of persons gainfully employed in the state. No attempt to select unions from which to obtain returns was made by the Massachusetts department, except to omit organizations of musicians, firemen, post-office employes, and certain others to which the inquiry was not thought particularly applicable. When it was apparent that an industry, occupation, or city was insufficiently represented in the total group reporting, effort was made to secure such additional returns as would re-establish balance. Most of the reports were returned with a fair degree of promptness. Follow-up letters were mailed to secretaries who failed to make returns within ten days, and

¹ From 1920 to 1923 in the *Massachusetts Industrial Review*; previous to 1920 in the *Quarterly Report on Employment in Massachusetts*, which was superseded by the *Review*.

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if any report which was delayed was especially desired because of the statistical importance of the particular union in the complete record, a field agent was sent to secure it.

Trade union statistics are not representative of all classes of wage-earners, and for this reason they fall short of affording a comprehensive measure of unemployment. Unskilled workers and clerical workers, for example, are very inadequately represented by union figures. The representativeness of these figures differs also in different parts of the country. For sections and for industries in which labor is strongly organized, however, this objection does not hold.

c. Enumeration of the Unemployed by Canvass.—No nationwide enumeration of the unemployed has been undertaken recently in this country. At three of the United States censuses of population (1880, 1890, and 1900)¹ efforts were made to carry out such an enumeration as part of the regular canvass, but these experiments have not been repeated in recent years, partly because of the expense involved and partly because of lack of confidence in the results on the part even of those who planned and organized the investigations. The Committee on Governmental Labor Statistics concurs in the view that results so obtained are probably too unreliable to justify the great expense and time involved. One especially difficult aspect of the collection of unemployment data by means of such a canvass is the difficulty of defining closely enough for accuracy just what constitutes "unemployment."

Nevertheless a local enumeration in part of a city or other limited area as a sample may sometimes be made to advantage. This is feasible only if specially trained personnel and adequate administrative machinery for a prompt survey are available. Examples of useful local enumerations of this sort are those made by the Metropolitan Life Insurance

¹ Twelfth Census of the United States, 1900—Occupations. Washington, Government Printing Office, 1904, p. ccxxv.

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Company and the United States Bureau of Labor Statistics in 1915,¹ and by the Department of Economics of Ohio State University in 1921 at the request of the Mayor's Emergency Unemployment Committee of Columbus, Ohio. This latter study has been continued annually since.² In the studies made by the Metropolitan Life Insurance Company the families of industrial policy-holders of the company were canvassed, first in New York and later in certain other cities, on the assumption (which appears to have been correct) that they constituted representative portions of the wage-earning population in the cities studied. In the two studies made by the federal Bureau of Labor Statistics in New York City in 1915³ a complete canvass was made of the population of representative blocks. In the more recent Columbus study a complete canvass was made of carefully selected sections of the city.

Each of these studies was planned to meet an urgent need for statistical information in the emergency of widespread unemployment. Those of the federal Bureau of Labor Statistics and of the Metropolitan Life Insurance Company were conducted by the personnel of large statistical offices equipped for carrying on such special investigations. The Columbus survey, however, furnishes an illustration of how reliable local canvasses might be made occasionally in many cities in the United States. In this survey approximately 100 students of Ohio State University acted as field workers under the direction of members of the department of economics.

¹ Unemployment in New York City, New York, Bulletin No. 172, April, 1915; and Unemployment in the United States, Bulletin No. 195, July, 1916.

² Mark, Mary Louise, and Croxton, Frederick E., "Unemployment Survey in Columbus, Ohio," in *Monthly Labor Review* (U. S. Bureau of Labor Statistics), Vol. XIV, pp. 622-631, April, 1922. A report of the five successive surveys prepared by Mr. Croxton is to be published shortly as Bulletin 409 of the United States Bureau of Labor Statistics under the title, *Unemployment in Columbus, Ohio, 1921 to 1925*.

³ The Police Department of New York City co-operated in the first of these by making a count of the unemployed among the homeless who were found in various temporary lodgings on one night in January, 1915.

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The procedure had been carefully planned in advance, and before the field work began the investigators were given thorough instructions concerning the nature of the inquiry and the methods of collecting the information. The canvass covered 11,000 wage-earners in 6,300 households located in three sections of the city, and required ten days for completion, the students carrying on their university work while the survey was in progress. The field work was closely supervised. The sections canvassed were carefully selected to represent all races, and included about one-tenth of the entire population of Columbus. A form was filled out for each family visited.¹ Second and third visits were made when necessary to complete the information. Facts concerning employment of all persons over eighteen years of age, except women who reported that they were not usually employed outside the home, were sought, together with additional data to make possible differentiation of the facts by sex, race, industry, and occupation. To insure the success of the canvass, care had been taken to secure the endorsement of the local federation of labor, the chamber of commerce, and other civic bodies; and suitable newspaper publicity informed the persons to be interviewed concerning the survey before it was launched.

It is significant that this survey has been carefully repeated at intervals of one year, in five successive years, for the same districts, the work being carried on under similar direction and by similar means, but without the publicity attending the original survey.

d. Registration of the Unemployed.—Another method of obtaining data on unemployment has been the voluntary registration of unemployed persons. This has been proposed as a feasible means by which local committees might determine the extent of unemployment in their communities in

¹ This form is reproduced in the Appendix, page 204.

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times of severe business depression. Such registration has been attempted in several cities, but nowhere has experience proved the method one to be recommended. Without a compelling motive for persons out of work to register, and without adequate means of preventing fraudulent registration if the incentive is expectation of relief, data so obtained are certain to be grossly inaccurate, and the effort expended in obtaining them will be wasted so far as their statistical value is concerned.

The unemployment statistics of Great Britain, although derived from actual registration of the unemployed, are of quite different quality. They are obtained through the administration of the law that provides compulsory unemployment insurance for manual workers and lower paid non-manual workers in most of the divisions of industry.¹ The insurance benefit here provides the incentive for registration; and the labor exchange machinery, established to prevent the fraudulent receipt of benefits, largely excludes from the count persons who are not actually unemployed. These British statistics are the most complete and reliable statistics of unemployment anywhere available, but even they include various elements of error arising from the possibility both of excluding persons who are unemployed and of including persons who are employed. They are regarded by the bureau compiling them as not affording "more than an approximately correct measure of the numbers of insured workers unemployed."² In this country, of course, no such data are available, because employment exchanges lack the kind of machinery for registration upon which they depend.

¹ The important exceptions are agriculture, domestic service, and government service.

² For an excellent description and critique of these statistics, see the article by John Hilton, Director of Statistics of the British Ministry of Labour, "Statistics of Unemployment Derived from the Working of the Unemployment Insurance Acts," in *Journal of the Royal Statistical Society*, Vol. LXXXVI, pp. 154-205, March, 1923.

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STATISTICS OF EMPLOYMENT OFFICES

Employment offices register workers out of employment and positions vacant, and keep more or less accurate records of placements made. They show to a certain extent the demand for labor and the supply of workers, and thus reflect the activity of business and the intensity of changes in opportunities for employment. Where public employment offices are actively functioning in representative industries, the record of these operations may constitute an accurate index of employment. Obviously employment offices, in their daily activities of registration and placement, cannot furnish a direct measure of the volume of unemployment or employment, but changes in demand for employment, both in specific industries and in general, are at once evident in their daily experience. The value of this experience as an index of employment in general depends upon the extent and representative character of the work of the employment exchange.

Employment offices as a source of reliable statistics in the United States are of minor importance because of the inadequacy of the national provision for an employment service and because of variations in statistical methods in the employment agencies of the different states. Practically all public employment offices in the states in this country are now co-operating with the United States Employment Service, which assembles and publishes monthly statistics of their operations.¹ In the aggregate, these figures are of limited value, however, because of wide differences in methods of recording and compiling them. In Great Britain or in Canada, where a national system of employment offices has substantially a monopoly of the employment office business, and where uniform methods of record-keeping are maintained, employment

¹ Monthly Report of Activities of State and Municipal Employment Services Co-operating with U. S. Employment Service.

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office statistics give a more valuable source of supplementary information concerning employment than we can yet obtain in this country. Notwithstanding this, however, some very striking illustrations of the way in which data of this type confirm those obtained from other sources have been secured¹

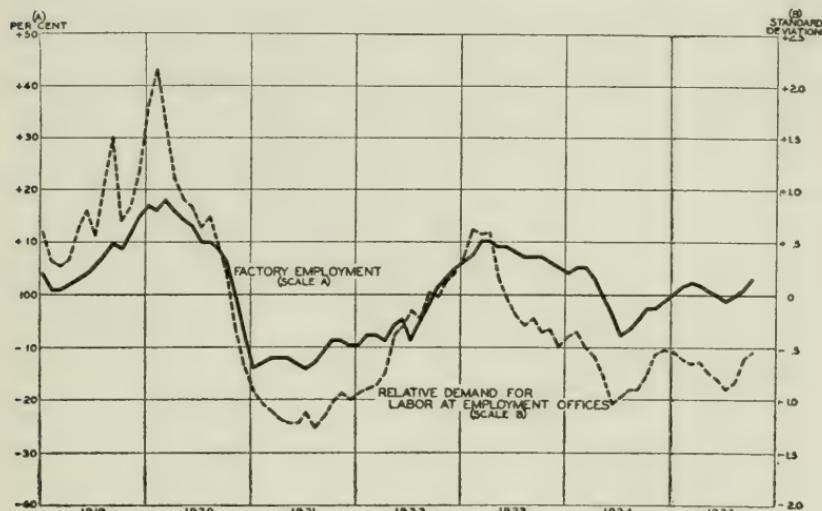


DIAGRAM 8.—FACTORY EMPLOYMENT AND DEMAND FOR LABOR AT EMPLOYMENT OFFICES

Employment base: 1919 to 1922 average = 100

Demand for labor base: 1919 to 1922 average = 0

Both indexes are those of the Federal Reserve Board. The employment index is the same as that shown in Diagrams 5 and 6. The employment office index is constructed from data for six states having a system of public employment offices—Massachusetts, New York, Pennsylvania, Ohio, Illinois, Wisconsin.

from the data for employment offices of selected states in this country through methods which appear reliable to this committee. Comparison of the Federal Reserve Board

¹ In a study made in 1923 for the Federal Reserve Board by William A. Berridge and Woodlief Thomas (see *Federal Reserve Bulletin*, Vol. X, pp. 83-87, February, 1924) and in subsequent investigations by the former on the problem of labor-turnover fluctuations; see, for example, "Labor and the Business Cycle: Some Industrial Aspects," in *Review of Economic Statistics*, Vol. VIII, pp. 134-143, July, 1926.

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indexes of demand for labor at employment offices and of factory employment is made in Diagram 8.

EMPLOYMENT STATISTICS FROM PAYROLLS

In our judgment, for reasons already set forth, the most feasible source of statistics relating to employment in the United States is the payroll, which shows the number of persons employed. Although the "volume of employment" might be measured more precisely in terms of total hours of work of all employes in a specified period, statistically known as "man-hours" or "employe-hours," these more significant figures cannot at present be obtained promptly and accurately on a comprehensive scale. Fortunately, for many of the purposes for which employment statistics are used, data on the number of workers employed approach in value those on employe-hours.¹

Every payroll contains at least some mark of identification of each employe of the concern, and the wages received by him within a specified pay period. It is a timely and accurate record, available in almost every industrial organization of appreciable size. The required figures of total number employed and total wages paid can be transcribed to a report form with very little effort and with comparatively small chance of clerical error. It is practicable, therefore, to obtain these data at frequent intervals and by means of inquiries sent through the mail.

In some instances the bureaus now collecting payroll statistics obtain only the number of persons employed. More frequently, as may be seen from Table 1, both the *number of employes* and the *total amount of wages* shown on the payroll are recorded, and the statistics are thus commonly referred

¹ For discussion of the relative unimportance of overtime and part-time employment in comparison with the volume of full-time employment, see King, Willford L., *Employment, Hours, and Earnings in Prosperity and Depression*. New York, National Bureau of Economic Research, Inc., 1923, pp. 47-53.

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to as statistics of employment and earnings. The figures for total earnings are valuable as a check on those showing the number employed. They are valuable also for what they show directly concerning purchasing power, and when divided by the total number of persons at work, they give *average earnings per employe*, a figure which is worth obtaining for rough indication of changes in the rate of wages.¹

The historical development of the collection of these payroll statistics was discussed in Chapter I. With the details of the method of their collection, analysis, and publication, the remaining chapters are concerned.

¹ It is, of course, not possible by mere inspection of the figures to detect the cause of increase or decrease in "average earnings per employe" or in "total amount of wages." Overtime and part-time changes in wage rates and in standard hours of work, holidays, break-down of machinery, rail tie-ups, storms, and various other causes may affect these figures for particular plants or for all plants. The aggregate figures give over a succession of months a fairly trustworthy indication of actual trends in employe-earnings. The average figures are less stable, but, particularly if they can be divided by sex, are useful as an indication of individual earnings.

CHAPTER IV

HOW TO COLLECT PAYROLL STATISTICS FOR MANUFACTURING INDUSTRIES

THE first step in planning for the current collection of employment statistics from employers is to determine the scope of the inquiry and the extent of the information to be obtained. Decision must be made at the outset as to the industries and firms to be included. It may be impracticable to include all industries, and it certainly is unnecessary to cover all establishments in any industry in order to obtain a satisfactory representation.

Thus far, considerably more has been done in measuring employment in manufacturing than in other industries. Moreover, in many states manufacturing is the industry in which local data are most needed, owing to the large number of persons dependent thereon and the highly sensitive fluctuations, both seasonal and cyclical, which characterize many factory industries. The purpose of this chapter is, then, to formulate certain principles governing the collection of data on employment and earnings of wage-earners in factories, on the basis of the fairly rich experience already available in state and federal bureaus. For industries other than manufacturing the corresponding problems of collection are treated in Chapter V.

SIZE OF THE SAMPLE

Experiment has shown that relatively small samples often yield reliable information concerning the course of employment, if the firms supplying the data have been properly selected. The United States Bureau of Labor Statistics, in

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inaugurating its original series of employment statistics in 1915, aimed to cover at least 40 per cent of all the workers in each industry canvassed. The Massachusetts, New York, and Wisconsin bureaus have, so far as possible, followed a similar practice.

Reliable statistics could probably be compiled on the basis of samples smaller than 40 per cent.¹ But for practical purposes a list of firms giving considerably more than the minimum sample necessary for statistical reliability is advisable, since in any month some firms will fail to report, or report too late to be included in the current tabulation. Probably one-third is a feasible proportion at which to aim. Forty per cent of the workers in any industry would appear to be in general an upper limit of the quota needed; and frequently a much smaller proportion may be found ample. As a rule, the smaller the state or the industry, the larger the sample needs to be to give statistical reliability, so that in some states relatively larger samples may be needed than in others.

SELECTION OF REPRESENTATIVE FIRMS

The problem of selecting establishments from which to obtain the data requires careful study. Regardless of the total number of employes included, the sample can be good or bad, depending on the extent to which it is representative of the industry as a whole within the state or other area concerned. To obtain a representative sample, firms should be so selected as to give proportionate representation in respect to: (1) industries, (2) size of plants, and (3) location of plants.

There are, in other words, two steps in the process of selecting reporting firms. It is first necessary to plan the sample; i.e., to determine how many firms of various sizes

¹ In fact some members of the committee hold that a properly selected sample of 15 per cent or even less would be adequate for some industries.

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in each kind of industry in each part of the area will give a proper balance. The next step is to find the individual firms to fit the requirements.

All the important manufacturing industries should be represented in the sample. The Bureau of the Census issues separate reports on manufactures for each state,¹ which are useful in determining the industries to be included in any state or group of states. These reports show the number of wage-earners employed for all but the small industries.² For the more important industries in each state, the census reports classify the number of establishments and the number of employes by size of establishment.³ If this list is sufficiently varied and includes more than three-fourths of the total number of employes in all the manufacturing industries in the state, the very large number of minor industries can usually be disregarded with safety in making up the sample. In some areas, however, the number of industries for which the classification by size of establishment is published is not sufficient.⁴

It may be necessary to include establishments from other than these "principal" industries in order to get representative samples for single cities or industrial districts for which it is desired to record employment trends. This is a special problem in the construction of the sample which should receive careful attention. It cannot be too strongly empha-

¹ Now issued biennially.

² In some of these state reports, the Bureau of the Census is obliged to omit data for certain large establishments in order to avoid disclosing their operations. This fact sometimes impairs the use of the reports in allotting samples industrially or geographically.

³ Two classifications by size of establishment are given. That based on number of employes is more useful for this purpose than that based on value of product.

⁴ The census reports are not uniform in the extent of the industrial classification for which size of establishments is shown; and the proportion of the total number of employes covered varies considerably. But for most states the industries for which the information is given account for at least 75 per cent of the total number of employes.

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sized that tabulation of the data by cities or other small areas may yield entirely misleading results unless care has been taken in advance to make sure that the samples from these areas are truly representative of their industrial character. It should also be remembered that the census data by cities necessarily follow political and not economic boundaries. In order to represent properly an economic district about a city, a bureau can often do better by combining figures for several towns and cities or even by utilizing data for counties.

Other information than that contained in the census reports will be necessary to plan for proper geographical representation in the sample. The census reports give the total number of establishments and of employes in each county and city, but, except for the larger cities,¹ this geographical information is not subdivided by industries. Many state bureaus will have in their own offices the additional information necessary. The industrial directories published by departments of labor in several states give the name and address, chief products, and number of employes of all but the smallest manufacturing establishments in the state. Factory inspection records also usually give this information; commercial registers and manufacturers' and trade association lists are other sources which often give the name and address of each firm, the nature of the product, and the number of employes, amount of capital, or other clues to the size of establishments. From this sort of information, in conjunction with the census material, the distribution of the sample can be effectively planned in advance. These sources can also be used in choosing the firms to make up the sample.²

¹ For 1919, above 50,000 inhabitants; for 1921 and 1923, above 100,000.

² They sometimes give in addition to the items mentioned the name of at least one officer, with whom it is often advantageous to establish contact before making the first request for information.

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Great care is necessary in determining the proper classification of firms considered for the sample. The kind of product is not always disclosed in published lists or even in factory inspectors' reports, and frequently more than one class of product is made in the same establishment. When more than one kind of product is made, the practice of the Census Bureau in classifying by "principal product" should be followed.¹ Correspondence may be necessary to establish the proper classification of establishments under consideration.

Firms should be selected to represent distinct industries and not merely groups of industries. For example, suppose that the persons engaged in "flour and grain milling" represent 5 per cent, "baking" 4 per cent, and "slaughtering and meat packing" 3 per cent of all those employed in manufacturing industries in a state, while the workers in "canning," "sugar refining," "dairy products," and all other food production taken together represent 5 per cent of the number employed in all manufacturing industries. It would be incorrect to select at random from the first three alone, or indeed from all these industries combined, without regard to their relative size, to get a representative sample of the "food industries" as a unified group, because the various industries making up the group differ greatly in fluctuations in employment. Rather, the selection of firms from the first three industries, for example, should be made to give representation to each in proportion to the percentage which it constitutes of the total employment in all the manufacturing industries of the state. This should be done for all the other

¹ The Census Bureau determines the classification in such cases by the value of product. For the purpose of employment statistics it is preferable to classify on the basis of the number of employees engaged in different lines of production. Sometimes it is possible to classify separate departments under different industries, but frequently it is undesirable or even impossible to allocate the number of employees. In the case of very large establishments this should be done if separate reports can be obtained.

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separate industries which are sufficiently large to require representation in the sample.

For a time—probably six months to a year—collection of data from a newly selected sample should be regarded as experimental. A final list of reporting establishments cannot be built up at once. Some errors in selection will inevitably be made; some firms which undertake to furnish the data will not continue to do so, while others will be chronically careless or delinquent in reporting; for these and other reasons it will be necessary to make changes in the list as the experimental collection proceeds.

However, it is wise to aim at the early establishment of a fixed list of representative firms from which the data can be obtained regularly and promptly. The New York State Department of Labor obtains its reports from month to month from such a fixed list of firms. The list was built up gradually by the selection of firms which were not only representative but which could also be depended upon to supply satisfactory information on time. Such substitutions have been made from time to time as have become necessary to keep the list representative, or to replace firms which have gone out of business or for some other reason have ceased to report; but these changes have been infrequent. The advantages of securing data from a fixed list of establishments are pointed out in Chapter VII.¹

SECURING THE CO-OPERATION OF FIRMS

Collecting bureaus have experienced some difficulty in finding truly representative establishments which would agree to supply the desired reports regularly, promptly, and accurately. The usual reasons are: (1) the large amount of labor assumed to be necessary in reporting at frequent intervals, (2) lack of appreciation of the value of the information

¹ See page 142.

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when obtained, and (3) fear that the facts concerning the operation of the reporting establishment will be revealed.

The convenience of the reporting agent deserves the utmost consideration. During the past few years most industrial establishments have been harassed by governmental departments and private agencies which either solicit or demand long schedules of information, difficult if not impossible to supply and frequently involving duplication. Not unnaturally this demand has created prejudice against all new requests for data. A first principle in enlisting the co-operation of reporting concerns is to reduce to a minimum the amount of information requested. In fact, not much labor is required to transcribe the needed items from the payroll, and noticeably less difficulty is now being encountered in obtaining the co-operation of reporting establishments, because they have found how little effort is required. Furthermore, the usefulness of employment statistics for the individual concern is coming to be more generally recognized.

Assurance should be given by the collecting bureau to establishments that their reports will be held in strict confidence; that neither the facts reported for any one plant, nor the identity of any reporting firm will be disclosed. Many firms will demand such assurance before consenting to report. In observing this pledge, the bureau should so safeguard publication of the data that neither directly nor indirectly will information concerning an establishment be revealed.

In addition, each firm should be promised a copy of the periodic compilation in which its figures with others are incorporated, thereby affording it a useful check upon its competitive position.

Usually, if the purposes are explained adequately, the co-operation of reporting firms can be obtained through correspondence. Experience has proved, however, that it is more satisfactory if a competent representative visits the

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establishment and describes the value of the statistics to a business, as well as to the public generally. This is expensive, and may be warranted only in following up the written request to companies whose reports are especially needed to make up the sample. Both the New York State Department of Labor and the federal Bureau of Labor Statistics have employed field agents in securing co-operation of firms. In Illinois the superintendents of the state employment offices, which are under the Department of Labor, are called upon to visit firms, explain the statistics desired, and arrange for their regular return.

The support of trade associations or other groups of employers can be used effectively in the first approach to an establishment. A campaign of education prior to any attempt to enlist the interest of particular companies may be advisable. For example, when the collection of payroll statistics was proposed in Wisconsin, a conference of both manufacturers and labor leaders was arranged at which the project was explained. While the labor leaders approved the collection of the data, the majority of the manufacturers were at first opposed to it. Subsequently the members of the state Industrial Commission and its staff discussed the plan at numerous meetings of trade associations, before chambers of commerce, and with as many individual employers as possible. The approval of officials of trade associations was obtained, and was found of great assistance when the attempt was finally made to collect the data.

Form letters used by the United States Bureau of Labor Statistics and the Massachusetts bureau in soliciting reports from employers are reproduced in the Appendix.¹ These letters are not alike, yet each illustrates a way in which the request can be made and the purpose of the inquiry explained briefly. A point not mentioned in either of these letters,

¹ See pages 186 and 187.

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but worthy of emphasis in a first approach to employers, is that the greatest value of the information to them as well as to the public depends on securing reports regularly from a constant number of firms in order that the results may be directly comparable from month to month.

In general, it is both unnecessary and undesirable to rely on legal authority to obtain the data. The New York State Department of Labor cited the law in making its early requests in 1915, but authority has never been used to compel firms to report. In preparing for the collection of payroll figures in Canada, care was taken to provide a penalty for non-compliance on the part of employers who without reasonable excuse should refuse or neglect to answer, or should answer falsely, the questions asked. This penalty has never been imposed. The Canadian Bureau of Statistics does, however, insert at the top of the form submitted, in order to indicate the authoritative nature of the request, "Required under the Statistics Act, 1918, Chap. 43." All bureaus in the United States collecting current employment statistics have found it satisfactory to make the rendering of reports purely voluntary. But, although it is unnecessary to resort to compulsion, the law under which the bureau collects such statistics should be so drafted as to make their collection legal beyond question.

INTERVAL BETWEEN REPORTS

Although payroll data have at times been collected at weekly, monthly, quarterly, and yearly intervals, all the official bureaus now collect them at monthly intervals. This practice is recommended. Weekly information is more frequent than is generally practicable or necessary, and on the other hand, the quarterly interval is too long to reveal promptly a sudden change in employment. The monthly interval is desirable also because most of the other economic

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and social statistics which are regularly reported to governmental bureaus are available each month.

The time may come when weekly data on employment or earnings will be commonly collected from small samples, especially by state or local organizations. This is already being done in two cities, Detroit and Bridgeport, and gives valuable evidence when business conditions are "turning the corner" rapidly after a boom or depression.

THE DATE OF COLLECTION

With but two exceptions the governmental bureaus collecting current payroll statistics in this country do so for a payroll period falling in the middle of the month.¹ This practice has been recommended for two reasons. First, it eliminates annoyance to officers and clerical force near the beginning or the end of the month, when they are most occupied with their own records. Second, it so happens that few holidays fall in the week which includes the fifteenth, so that the choice of that date insures usually a normal working week, which is especially desirable in compiling statistics of weekly earnings. The federal Bureau of Labor Statistics and several other bureaus specify the payroll period *ending nearest* the fifteenth of the month, while the New York and Wisconsin bureaus specify the payroll period *including* the fifteenth of the month. The latter practice fixes the period more definitely in the month, and is therefore recommended.

Collecting information for a single "payroll period" is much simpler than obtaining *average* daily or weekly payroll data for the entire month. The latter method would only be possible after the entire month had elapsed, and would

¹ The Iowa Bureau of Labor requests its figures from the last payroll of the month. The federal Department of Agriculture collects its data for farms as of the first of the month. The Canadian Bureau of Statistics collects for the last day of the month, but uses the data as referring to the following day. None of these bureaus collects information on earnings.

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greatly increase the labor both of compiling and of returning the data on the part of the reporting firm, without adding appreciably to their value; it would also greatly delay the publication of the results. More prompt return of the information would be possible if establishments were asked to report only the number of workers employed on a given date in each month, instead of both the number employed and amount of wages for a payroll period. Specifying the payroll period necessitates waiting until that period is completed, and the date of completion, as well as the length of the payroll period, varies in different establishments. Before the reports from all establishments can be obtained, therefore, a considerable period may elapse. Clearly, however, a payroll period rather than a given date in the month must be specified if information concerning the total amount of wages paid is desired. It is also probable that the figure for number of workers employed is somewhat more accurate if it can be taken directly from the payroll. If the number at work on a specified day is called for, a rough estimate is very likely to be given. The number on the payroll, however, includes all who have worked at any time during the week, and in a period of high turnover it gives a false impression of the size of the force.

THE INFORMATION CALLED FOR

As already explained, the two essential items to be reported are: (1) number of persons working, and (2) total amount of wages. The question concerning the amount of wages was first asked as an aid in interpreting or detecting errors in the figures on number employed. The information is, however, highly valuable in itself, and, since it can be as readily taken from the payroll¹ as the number of employes (often more

¹ In some industries, as for example in agriculture, there is generally no payroll. While employment figures can be obtained without a payroll, wages cannot be ascertained with the same ease and probable accuracy.

HOW TO COLLECT FOR MANUFACTURING INDUSTRIES

readily), we have recommended that it be secured. Some other items of information are necessary for proper interpretation of the report. These relate to the length of the payroll period for which the report is made, the number of plants included, and changes in standard hours of work or in wage rates since the previous report.

The desirability of adding requests for more detailed data, such as classification by sex, or information concerning wage rates, employe-hours worked, or labor turnover, has already been discussed briefly in this study.¹ In an extensive monthly canvass much is to be gained by keeping the inquiry as brief as possible. Nevertheless the need for current collection of more detailed information concerning employment is apparent and is being realized by both the collecting bureaus and the reporting employers. That a classification by sex can be successfully obtained from a large proportion of the establishments reporting has already been demonstrated by the experience of several bureaus. Very recently, following suggestions made in the discussions of this committee, the Wisconsin and Illinois bureaus have taken steps to add to their monthly inquiry a question the answer to which will reveal the extent of labor turnover.² It has also been suggested by some members of the committee that data from which to construct indexes of wage rates be collected in connection with the regular employment inquiry.³

¹ See page 6.

² Monthly indexes of labor turnover are now being compiled currently for the Metropolitan Life Insurance Company and the Brown University Bureau of Business Research by William A. Berridge, and for a group of varied manufacturing plants in the Philadelphia district and for metal manufacturing plants in various cities in the United States by Anne Bezanson, of the Department of Industrial Research of the University of Pennsylvania. These indexes were described in papers presented at the annual meeting of the American Statistical Association in December, 1925.

³ An index of the rate of wages for common labor has been currently constructed for several years by the Federal Reserve Bank of New York; see Burgess, W. Randolph, "Index Numbers for the Wages of Common Labor," in *Journal of the American Statistical Association*, Vol. XVIII, pp. 101-103, March, 1922. A similar index of common labor wages is compiled currently by the Cleveland Chamber of Commerce.

VOLUME OF EMPLOYMENT

B. L. S. 364

U. S. DEPARTMENT OF LABOR BUREAU OF LABOR STATISTICS WASHINGTON

GENTLEMEN: Please fill the inquiries on this blank and return it to this Bureau so that it will reach Washington not later than the 25th of the month, if possible.

I am, very truly yours,
ETHELBERT STEWART,
Commissioner of Labor Statistics.

PAY ROLL ENDING NEAREST DECEMBER 15, 1924

1. Principal products.....
2. Pay roll ending....., 1924.
(Enter date)
3. Period covered (one week, two weeks, half month, or month).....
4. Amount of pay roll..... \$.....
5. Total number of persons who worked any part of period.....
6. If there has been marked increase or decrease in total pay roll or employees since **NOVEMBER** report, please state reason.....
7. (a) **PER CENT** of **FULL TIME** establishment operated.....
- (b) **PER CENT** of **FULL CAPACITY** establishment operated.....
[Full capacity (100 per cent) means a full normal number of employees]
8. If you made any change in **RATES** of wages between **NOVEMBER 15** and **DECEMBER 15**—
 Give date..... Was it an **INCREASE**?..... or **DECREASE**?.....
 Per cent of change..... Number of employees affected.....
9. If more than one plant is covered by this report, how many altogether?.....
10. Location of plants.....
11. Name of company.....
12. Office address.....
(Street) (City) (State)

QUESTIONNAIRE USED BY UNITED STATES BUREAU OF LABOR STATISTICS

HOW TO COLLECT FOR MANUFACTURING INDUSTRIES

FORM OF THE QUESTIONNAIRE

Information should be collected by means of a questionnaire, which should be brief, clear, and well arranged. The form used by the United States Bureau of Labor Statistics is reproduced herewith. It contains spaces calling for the entry of 12 items of information including the name and address of the firm supplying the data, and the products manufactured. Several of the collecting bureaus do not ask for these three items, but enter the name and address of the firm, by stencil or otherwise, on the schedule before it is sent out.

We also present here two forms drawn up by a sub-committee appointed to study the possibility of recommending a standard questionnaire for the collection of payroll statistics. Both were prepared with manufacturing establishments primarily in mind. One represents the minimum of data necessary. This calls for separation of data for office and shop force, if they are available in this way. Where two payrolls are used, such separation should add considerably to the convenience of reporting. The New York bureau asks for its reports so classified, while some of the other collecting bureaus ask for reports on the shop force alone. It is very desirable to know whether or not the office as well as the shop force is reported upon, but at least for bureaus beginning the collection of these statistics it would probably not be practicable to require separation of the data.

The first form calls for little explanatory information. The inclusive dates of the payroll period are asked for, and the number of working days covered. A blank column is provided for entering the average earnings figure, which may well be calculated for each firm, if only because, when recorded from month to month, it furnishes a check on the accuracy of the two figures from which it is derived.

**CONFIDENTIAL MONTHLY REPORT ON EMPLOYMENT
AND WAGES**

(This space for addressograph)

This report should be made for the payroll period including the 15th day of the month and should be mailed before the 25th, if possible.

	Number on payroll	Amount of payroll	Period of payroll (Enter inclusive dates)	Number of days plant operated in payroll period	Leave this space blank
Office force Including superintendents, foremen, clerks, and others carried on office payroll			From..... to.....		
Shop workers Including foremen carried on shop payroll			From..... to.....		
All employees Make entries here only if you have no separate records for office force and shop workers.			From..... to.....		
<p align="center">Signature.....</p> <p align="center">Title.....</p> <p align="center">Date.....</p>					

SUGGESTED STANDARD QUESTIONNAIRE—MINIMUM SCHEDULE

HOW TO COLLECT FOR MANUFACTURING INDUSTRIES

The second of the two suggested forms calls for more explanatory information, including changes in working hours and wage rates, extent of operation, and special circumstances accounting for large variations in the basic figures reported. It calls also for separation of the basic information by sex and for the number of employe-hours worked in the payroll period. This expanded schedule is suggested as a possible standard toward which to aim.

It would not be wise for a bureau to adopt this schedule outright, but the minimum schedule might be modified as circumstances permit, by including some of its features. Of the schedules used by the present collecting bureaus, that of the New York bureau most nearly approaches this completeness. This schedule is reproduced in the Appendix¹ together with those used by several other bureaus. It calls for most of the items included on the suggested complete schedule, with the exception of those for employe-hours and per cent of full-time and full-capacity operation of the plant.

The sub-committee, in submitting these two suggested forms, recommended:

1. That the issuing bureau enter the name and address of the firm on the schedule before sending it out.
2. That the minimum schedule be used in introducing the collection of the data, until the reporting firm becomes familiar with the inquiry, but that it be expanded as quickly as feasible by the addition of the supplementary questions of the complete schedule.
3. That separation of the basic data by sex and information on employe-hours be requested only from firms whose records are so kept as to make this information readily available.
4. That in introducing a new inquiry which might prove difficult for the firms to answer, it be sent out at first on a

¹ See page 197.

CONFIDENTIAL MONTHLY REPORT ON EMPLOYMENT AND WAGES

“This space for addressograph

This report should be made for the payroll period including the 15th day of the month and should be mailed before the 25th, if possible.

		Sex	Number on payroll	Amount of payroll	Number of employee-hours	Period of payroll (Enter inclusive dates)	Number of days plant operated in payroll period	Leave this space blank
Office force Including superintendents, foremen, clerks, and others carried on office payroll		Male				From to		
		Female						
		Both sexes						
Shop workers Including foremen carried on shop payroll		Male				From to		
		Female						
		Both sexes						
All employees Make entries here only if you have no separate records for office force and shop workers.		Male				From to		
		Female						
		Both sexes						
<p>1. Change in working hours since last month's report: if no change occurred, enter zero in the third blank space below.</p> <p>a. Former hours per week _____ b. Present hours per week _____ c. Number of employees affected by change _____</p> <p>2. Change in wage rates since last month's report: if no change occurred, enter zeros in the blank spaces.</p> <p>a. Percentage of increase _____ b. Number of employees affected _____ c. Percentage of decrease _____ d. Number of employees affected _____</p>								
<p>3. a. Per cent of full-time establishment operated _____ b. Per cent of full-capacity establishment operated _____</p> <p>4. Note here circumstances affecting the significance of the figures reported, such as labor trouble, departments or branch factories opened and closed, holiday, inventory, lack of material, or repairs.</p>								
<p>Signature.....</p>								
<p>Date</p>								

HOW TO COLLECT FOR MANUFACTURING INDUSTRIES

different form and included on the regular form only after its success is assured.

The caution against the inclusion of an unfamiliar question on the regular form is of great importance if firms are to be expected to return their information promptly. Similarly, if occasional requests for supplementary information are to be made from firms receiving the monthly questionnaire, they should be kept distinct from the regular questionnaire in order not to delay its return.

On the suggested schedules, space is given for the signature and title of the person making the return—a feature not necessary but probably desirable, as a signed report is likely to be more carefully filled out than an unsigned one. It is probably not essential to ask for the date on which the information is entered, although doing so may tend to increase the promptness with which returns are made.

These forms may be folded so that the firm's address entered at the top will appear through a window envelope, making it unnecessary to address envelopes for sending out the schedules.

MAILING THE QUESTIONNAIRE

Questionnaires should be prepared well in advance of mailing, and mailing should be timed so that they may reach the establishments about the fifteenth of the month.¹ They thus serve as a reminder as well as a form on which to report. Some of the state bureaus have found it wise to address the monthly questionnaire to a particular person in each firm, and one aims to have the form delivered on the Monday morning following the close of the payroll period for which figures are desired.

¹ Instead of mailing a fresh form each month, a book of forms can be supplied to each company once a year, sufficient to cover 12 returns, with duplicates to be retained. This practice is followed by the National Industrial Conference Board in its collection of payroll data from its members.

EMPLOYMENT STATISTICS FOR THE UNITED STATES

Some collecting bureaus send out duplicate questionnaires to encourage the reporting firms to file a copy of the report returned. Many firms request that duplicate forms be supplied for this purpose. If this is done, it is convenient to have the second printed on paper of a distinctive color and labeled "Duplicate report for your file." Some bureaus now enclose with the current questionnaire the composite tables and discussion of the data assembled for the preceding month, thereby saving the labor and expense of separate mailing and sharpening the employer's interest in filling out the new form.

Self-addressed return envelopes should invariably be enclosed with the forms. Bureaus not co-operating with the federal bureau in the securing of payroll data, and therefore without the franking privilege for this purpose, should stamp their return envelopes.

FOLLOWING UP LATE RETURNS

If the payroll period selected for the reports includes the fifteenth of the month, a large proportion of the returns may be expected before the end of the month. A follow-up request should be sent not later than the first of the next month to firms which have not yet reported, unless it is known that for some reason, such as the use of a monthly payroll, the report is necessarily delayed. Frequently firms intending to be prompt in filling out the forms overlook them, especially in the vacation period. It is sometimes necessary to send even a third letter. New forms should be included with each follow-up request. Finally, a telephone call, a telegram, or even a field visit¹ may be necessary to bring in late reports of the more important firms.

Some bureaus make use of a form letter to request reports

¹ The New York bureau regularly utilizes its field agents in securing late returns when they are in the neighborhood of a tardy correspondent.

HOW TO COLLECT FOR MANUFACTURING INDUSTRIES

which are overdue; others find that better results are obtained from individual letters. Two such letters are reproduced in the Appendix.

The rounding up of belated reports is the last step in the collection of data, and overlaps the process of tabulation. Since this operation is common to both manufacturing and non-manufacturing industries, we digress here in order to discuss in Chapter V the problems of collecting data in other than manufacturing industries.

CHAPTER V

HOW TO COLLECT PAYROLL STATISTICS FOR NON-FACTORY INDUSTRIES

EXPERIENCE shows that although in any of the large groups of industries reports of numbers at work, which will give reliable indication of trends in employment, can be obtained from employers, the problem is not precisely the same in every branch of business and industry. The methods of collecting information described in Chapter IV relate particularly to manufacturing industries. The present chapter discusses the methods of obtaining the data for other important groups specified in the priority list, namely, mining, transport and communication, construction, trade, and agriculture. Brief consideration is also given to certain other groups, such as logging, hotels and restaurants, public service, domestic work, and the professions, for which collection of the same kind of information from payrolls might be possible but would not ordinarily be practicable.

MINING

Mining is here considered to include the extraction of precious and base metals, anthracite and bituminous coal, oil, and quarried products. Of mining and quarrying industries, by far the most important in point of numbers employed is coal, which comprises nearly three-fourths of the total number of wage-earners engaged in mining and quarrying in the United States. In 1919, when the latest census of mines and quarries was taken, coal mining was seriously affected by a great strike; yet in that year the industry employed on the

HOW TO COLLECT FOR NON-FACTORY INDUSTRIES

average 693,000 wage-earners (546,000 in bituminous mines and 147,000 in anthracite mines), in other words, 70.6 per cent of all miners and quarry-workers in the country. Of other industries in this group, the leaders were petroleum and natural gas, which employed 9.5 per cent¹ of the labor engaged in all mining, and iron and copper ores, each of which employed between 4 and 5 per cent. The figures are shown in the accompanying table.

TABLE 2.—NUMBERS EMPLOYED IN MINE AND QUARRY INDUSTRIES OF THE UNITED STATES IN 1919*

Industry	Number of enterprises	Average number of wage-earners	Per cent of total wage-earners
Coal	6,890	693,170	70.6
<i>Bituminous</i>	6,636	545,798	55.6
<i>Anthracite</i>	254	147,372	15.0
Petroleum and natural gas	9,814	93,205	9.5
Iron ore	290	45,741	4.7
Copper	195	43,717	4.5
Limestone	895	22,069	2.2
Lead and zinc	432	21,884	2.2
Gold and silver, lode mines	740	15,436	1.6
Granite	358	8,049	0.8
Clay	345	5,453	0.6
Slate	101	3,513	0.4
Phosphate rock	48	4,373	0.4
Sandstone	255	4,287	0.4
All other	917	20,663	2.1
Total	21,280	981,560	100.0

* See Fourteenth Census of the United States—Mines and Quarries, 1919. Washington, Government Printing Office, 1922, p. 20.

Current data on employment in mines and quarries in any state or group of states should not be collected until the bureau concerned has drawn up such a table for its own area from the latest census report on mines and quarries.

In most of the mining and quarrying industries the method

¹ This industry undoubtedly ranks higher at the present time than it did in 1919, owing to phenomenal growth since the war.

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of obtaining reports on employment is not radically different from that in manufacturing. Establishments have a fixed location, and those employing the majority of the miners are reasonably large and keep fairly satisfactory payrolls. The two important items—the number employed and the total amount of earnings—can be furnished as in manufacturing industries, and the same form of questionnaire can be used.

Additional information is desirable, however, for bituminous coal mining. The extent of irregular, part-time employment in this industry introduces a special problem in the interpretation of employment figures. Bituminous coal mines in this country are typically operated on much less than a full-year basis; and the idle days, instead of being combined in extended periods of idleness, are as a rule distributed in broken time, a day or more a week throughout the year. Moreover, the men who actually mine the coal—approximately 60 per cent of the mine employes—are much more irregular in attendance while the mine is operating than is common in most manufacturing establishments. The number on the payroll, therefore, includes a larger proportion of employes who have been employed part time, and the record is much less indicative of the actual volume of employment, or even of the average number working during the payroll period than is true for most factory industries. In fact, "payrolls" of bituminous mines frequently include the names of men who have not worked at all during the payroll period. Under these conditions in bituminous mines the total number of employe-hours worked during the payroll period would be especially desirable as a part of the employment report, but unfortunately the record of hours worked by miners is not usually available. A figure for man-days could be obtained, but it would represent merely days begun rather than full days worked, and would require at most mines special compilation. Such a figure, if it could be

HOW TO COLLECT FOR NON-FACTORY INDUSTRIES

had, would give a much more accurate indication of employment than the number of workers on the payroll.

The men who dig the coal are paid by the ton, and the total amount of wages paid, except when substantial changes have been made in rates of pay, fluctuates in these mines in harmony with the actual volume of employment. The amount of wages therefore constitutes a check on the report of numbers employed, which is especially valuable in this industry. Another check, which is even more reliable, is supplied in data on production, or number of tons mined. The unit of product is standard. Tonnage is also a matter of daily record at the mine and can be entered readily on the employment report. There should, therefore, be no special difficulty in obtaining this additional information. Moreover, such correlative data on production would not only aid in interpreting the employment report, but might also throw light on efficiency in the mines. For these reasons, it is recommended that the questionnaire used for bituminous coal mines call for the number of tons produced in the payroll period as well as for the number of men employed and the total amount of earnings.

The failure of the figures showing the number of employees on the payroll to reflect faithfully the full violence of fluctuations in the volume of employment in bituminous mines is illustrated in Diagram 9.

This diagram pictures the course of employment and total wages paid according to the statistics of the federal Bureau of Labor Statistics for some 90 bituminous mines which, from May, 1919 to March, 1922, reported to it employment and earnings data similar to those obtained from manufacturing industries. These two curves, of numbers employed and of wages paid, are compared with the total production of bituminous coal in the United States for the same period. The employment curve shows, for the reporting mines only,

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the number of men who worked any portion of the payroll period covered in each month. The strike in 1919 and some of the depression in 1921 are reflected by it but it does not follow so closely the curve of total coal production as does

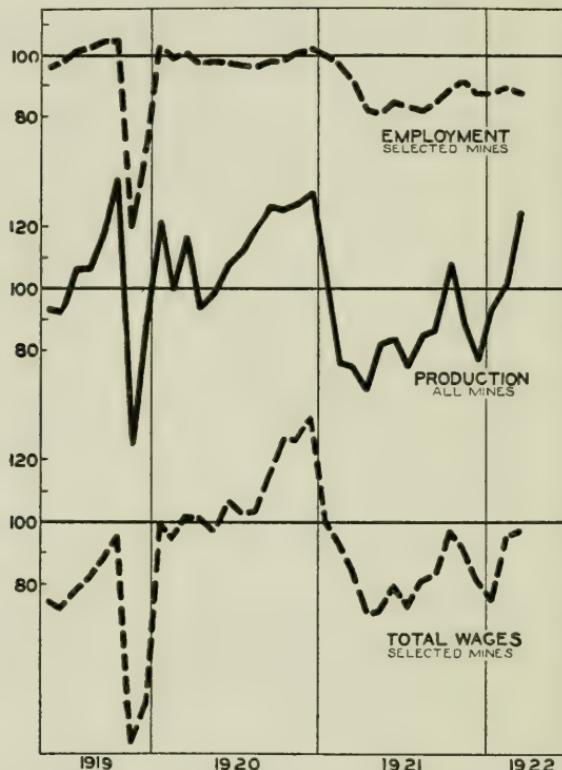


DIAGRAM 9.—INDEXES OF NUMBERS EMPLOYED AND OF TOTAL WAGES IN SELECTED BITUMINOUS COAL MINES REPORTING TO THE UNITED STATES BUREAU OF LABOR STATISTICS COMPARED WITH PRODUCTION IN ALL BITUMINOUS MINES, MAY, 1919 TO MARCH, 1922

Base: January, 1921 = 100

the curve of wages paid. Fluctuations in total wages would resemble those in total production somewhat more precisely, were allowance made for several changes in rates of pay during this period.

HOW TO COLLECT FOR NON-FACTORY INDUSTRIES

Anthracite coal mines are much more like manufacturing establishments in organization than are bituminous mines. Here operation is less irregular and employes are absent less often. The number on the payroll is therefore a better gauge of total volume of employment for anthracite than for bituminous mines. The production figures, however, could be obtained with a record of employment and earnings with as little difficulty as for bituminous mines, and would greatly increase the value of the report.

Long payroll periods are characteristic of both bituminous and anthracite mines. The most common interval between paydays is the half-month, but monthly periods are not infrequent. In selecting the mines to report, time may be saved by choosing those with the shorter payroll period, and the questionnaire should preferably call for information concerning the first half of each month rather than the last. Such precautions are necessary to permit publication of results as early as possible in the following month.

TRANSPORT AND COMMUNICATION

Transport and communication can be conveniently considered together, since each includes some public utilities in which single concerns operate over a wide territory and frequently in more than one state. The main subdivisions under communication are telephone companies, telegraph companies, and post offices. Under transportation the important subordinate groups are steam railroads, electric railroads, omnibus and taxicab service, express, trucking, shipping, and longshore work. Payroll statistics are now being successfully collected for one or more of these groups by several bureaus.

In the telephone and telegraph industries and steam railroads, a single company or a very small number of companies may represent an entire state or even a larger area.

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Each of these concerns ordinarily comprises numerous widely separated local units; they often prefer that reports to official bureaus be made only through their central offices. This plan reduces the number of reports to be handled by the collecting bureau, and should not greatly delay the return of the information. If a company operates outside the area for which the information is being collected, its report should be limited to that area so far as practicable. If it is desired to obtain data for these industries in separate localities or cities, division of the reports by cities or other units within the region may often be arranged; but this is not always practicable, especially in such widespread operations as those of important railroad companies traversing several states. Usually a central office will be able to make any necessary subdivisions of the data reported by it, but less confusion may result for both collecting agent and reporting concern, as well as greater promptness in obtaining the data, if reports can be obtained directly from local offices.

When central offices report for firms which hold a monopoly over a service within a given area, caution must be exercised in combining the figures with those for other industries. If the report covers the whole industry controlled by the monopoly, allowance must be made for over-representation in tabulating the results in combination with reports which cover only a sample of other industries.¹

Thus far no bureau has attempted to collect employment figures for post offices. In the larger offices, however, the volume of work fluctuates considerably at different seasons of the year, and numbers employed also vary. In planning a

¹ Where a sample is planned to yield a representative index by direct addition of the figures reported by a fixed list of firms, allowance is most easily made by dividing the figures for the over-represented industry by a constant factor. For example, if a telephone company's report represents all employment in that group within a state, while the firms reporting in other industries represent only one-third of total employment in those industries, the figures reported by the telephone company should be divided by three before being added into a general total.

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sample to represent the industry of communication, therefore, post offices might well be included.

In transportation other than steam railroads, the problem is largely one of finding a sufficient number of important employers who can represent the group adequately and who will be willing to supply the information. Canada has collected reports from employers, showing only numbers employed, in trucking, shipping, and stevedoring, but no bureau in the United States has yet collected figures for these groups, despite their peculiar importance in the problems of casual and seasonal labor. The supplementary information concerning earnings would be of great value.

CONSTRUCTION

In collecting figures for the construction industry, recognition must be given to distinctive types of construction, and the sample should be planned with this in view. Three divisions of construction—building, highway, and railroad—are most important. Under building, renovation and repair are properly included as well as original construction of buildings for dwelling, office, factory, and other uses. In the case of railroad construction a distinction may be drawn between construction and maintenance of way, but both should be included.

In urging in Chapter I that special efforts be made by governmental bureaus to obtain data on employment and earnings in the construction trades, the committee has not overlooked the difficulties in the way of readily obtaining adequate reports from employers in these industries. The working force of a building contractor is often small, and changes are frequent in places of work. The size of force employed varies with the nature of the contract under way and also with the progress of the work on it. The operations of a contractor are often disconnected, and the scene

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of activity shifts not only within a state but to an ever-increasing degree between states as well. Many building contractors, moreover, do little employing themselves, but sublet their contracts to numerous specialized sub-contractors.

Despite these difficulties, the experience of the bureaus which have attempted to collect figures for employment in

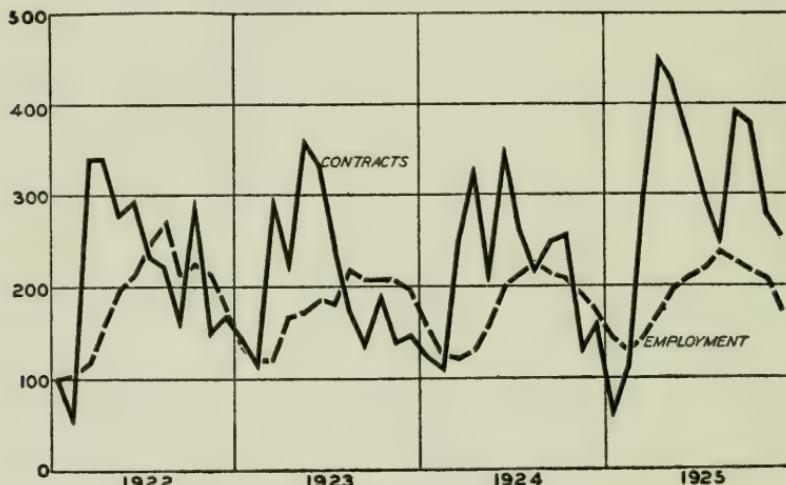


DIAGRAM 10.—INDEX OF EMPLOYMENT IN BUILDING CONSTRUCTION IN WISCONSIN COMPARED WITH THE VALUE OF BUILDING CONTRACTS AWARDED, 1922 to 1925

Base: January, 1922 = 100

For a discussion of this diagram, see Employment in Building Construction, supplement to *Wisconsin Labor Market*, Vol. VI, March, 1926, a report prepared by Orrin A. Fried, statistician of the Wisconsin Industrial Commission. The data on value of building contracts are those of the F. W. Dodge Corporation.

construction shows that satisfactory data can be obtained. In Wisconsin, Illinois, and Canada such data are being collected. These bureaus report no serious difficulty in enlisting the co-operation of building contractors and sub-contractors. Although many small contracting firms have intermittent work, the operation of larger concerns seems to be much less

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variable, according to data already obtained by these bureaus. In larger firms the contracts overlap, so that more stability of working force is maintained. Moreover, the fluctuations of work for different contractors (even the smaller ones) offset one another to a certain extent. Groups of workmen today employed by one contractor may tomorrow enter the employ of another. If a sufficient number of firms report regularly, a true picture for the industry may be obtained. In view of the frequent shifting, a larger sample may be needed in the building than in the factory industries. In practice, however, a large sample for construction would be hard to establish. In Wisconsin the sample used is very small, representing only about 5 per cent of the total employment in the building trades in the state; yet this small sample appears to yield typical results. The record of numbers employed so obtained appears to be representative when tested by knowledge of trends in contracts and in building permits. Diagram 10 indicates that in Wisconsin the time of changes in numbers employed on construction work lags behind the issuance of permits and the letting of contracts, exactly as would be expected.¹

It has been suggested that a more feasible means of recording trends of employment in the construction industries would be through further development of the statistics on unemployment reported by officials of labor unions. The union reports should be particularly representative for building because the building trades are very highly organized. The union in any branch of the building trades is usually a rather large organization with a fixed location, fairly permanent membership, and responsible officers. Its secretary

¹ For a thorough study of the various data on building permits and contracts let, see Hubbard, Joseph G., "Analysis of Building Statistics for the United States," in *Review of Economic Statistics*, Vol. VI, pp. 32-62, January, 1924. See also in this connection: *Seasonal Operation in the Construction Industries*. New York, McGraw-Hill Book Company, Inc., 1924.

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should have no great difficulty in estimating what proportion of the membership is unemployed, whether in the home town or temporarily elsewhere. The committee favors the extension of trade union reporting in an experimental way, to check up with direct measures of employment in the building industries. However, it believes that the builders' statistics, where they can be satisfactorily obtained, are preferable to those of union officials for the reasons already stated in this report; namely, that they are derived from existing records and are not mere estimates. The difficulties encountered in collecting from builders in an entire state or for the nation do not seem to be insurmountable.

A form of questionnaire very similar to that used for manufacturing industries can be used for construction. Separation of data by sex is, of course, unnecessary. It has been found useful to insert a question calling for the place or places at which work is being done. The Illinois bureau specifies on its questionnaire that the report is desired only for work being carried on within Illinois,¹ and has found that contractors who are operating both within and outside the state have been able and willing to segregate Illinois work for their returns.

The following list shows the variety of contracting firms included by the Wisconsin bureau in its sample for building construction. It will be found suggestive by bureaus planning to collect employment data for this industry. The Wisconsin sample includes in addition to general contractors: building contractors; electrical contractors; structural steel contractors; sheet metal contractors; stone work, masonry work, concrete work, and cement work contractors; plastering contractors; steam heating contractors; paint and oil contractors; and contracting engineering firms.

For comparison with other construction statistics detailed

¹ See page 193.

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subdivision of employment statistics for construction might be undertaken. The classification of building construction used by the F. W. Dodge Corporation in publishing building contract statistics is suggestive of the degree of subdivision which might be made. This classification is as follows:

1. Commercial Buildings	7. Public Works and Public Utilities
2. Educational Buildings	8. Religious and Memorial Buildings
3. Hospitals and Institutions	9. Residential Buildings
4. Industrial Buildings	10. Social and Recreational Buildings
5. Military and Naval Buildings	11. Miscellaneous
6. Public Buildings	

TRADE

Four governmental bureaus, the state bureaus in Wisconsin, Illinois, and Iowa, and the Canadian Bureau of Statistics are successfully collecting current monthly employment reports from employers in wholesale and retail trade. These bureaus have found that reports can be obtained from the larger firms without great difficulty. Several of the federal reserve banks, which in co-operation with the Federal Reserve Board have developed extensive reporting of sales statistics from mercantile establishments, have found it feasible to obtain data on employment, together with those on sales.

Diagram 11 compares fluctuations in employment in wholesale and retail trade with those in manufacturing, as shown by indexes maintained by the Philadelphia Federal Reserve Bank since August, 1923.

In trade, particularly retail trade, the small-scale units are of much greater importance, as compared with large enterprises, than in manufacturing. How much so cannot be definitely determined, because for this country no census of trade has yet been taken.¹ Willford I. King estimated,

¹ In 1905 a state census of trade was taken in Massachusetts; see *Census of Massachusetts, 1905—Manufactures and Trade*. Boston, 1908, pp. 199-294.

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as of August, 1920, that 2,600,000 wage-earners were employed in commerce and trade, distributed by size of establishment as follows:¹

	Number of employees	Per cent
Establishments employing over 100 employees	550,000	21.1
Establishments employing 21 to 100 employees	400,000	15.4
Establishments employing under 21 employees	<u>1,650,000</u>	<u>63.5</u>
Total	2,600,000	100.0

Contrast these with his estimates as of the same date for factories:

	Number of employees	Per cent
Establishments employing over 100 employees	8,060,000	70.9
Establishments employing 21 to 100 employees	1,950,000	17.1
Establishments employing under 21 employees	<u>1,360,000</u>	<u>12.0</u>
Total	11,370,000	100.0

To secure enough reports to represent adequately the very numerous and diversified small stores has proved difficult. As a result, the data on employment and earnings thus far compiled for commercial establishments represent in general selected large department stores rather than a proportional sampling of all retail and wholesale trade. For example, of 51 retail establishments reporting in one state, only 10 employ normally as few as 50 persons and these 10 have an entirely negligible influence on the total figures.

While ideally the sample for trade should include suitable proportions of establishments of various sizes, it is probably not expedient to attempt representation for the very small stores in their accurate proportions. Stores with from one to five employees outnumber all others, but while the aggregate employment in these very small stores is great, it seems probable that it is not subject to so much variation as in the

¹ Employment, Hours, and Earnings in Prosperity and Depression. p. 20.

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large stores. To give these and the slightly larger stores due representation in the sample would require so many reports, each covering so small a number of wage-earners, that it would impose a burden on the collecting bureau quite out of proportion to the value of the added returns. It is, however, distinctly desirable that some attempt be made to sample the smaller stores. Probably a separate index should be compiled for them. A general index for trade could then be

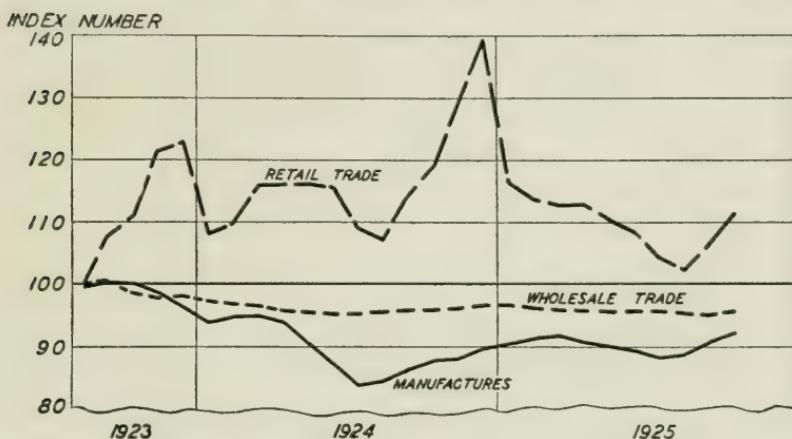


DIAGRAM II.—EMPLOYMENT IN RETAIL TRADE, WHOLESALE TRADE, AND MANUFACTURES IN THE THIRD FEDERAL RESERVE DISTRICT, 1923 TO 1925

Data from the Philadelphia Federal Reserve Bank.

constructed by giving appropriate weights to the indexes for large and small stores, according to the method described in Chapter VII.

Reporting firms should be selected to give proper representation to different lines of both wholesale and retail trade. Unfortunately, no information comparable to the census statistics of manufactures is yet available as a basis for planning a sample, and reliance must be placed on such sources of information as directories and trade lists. Several of the federal reserve banks are now collecting sales data for the

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following classes of trade: groceries, drygoods, hardware, furniture, shoes, stationery, drugs, farm implements, automobile accessories, electrical supplies. This list illustrates the extent to which division of the statistics according to the branches of trade may profitably be made. In retail trade separate statistics for department stores, chain stores, and mail order houses (where they are found) are desirable.

Because of the large number of women employed in retail stores, separation of the figures by sex is desirable; this is especially true if figures on earnings are to be obtained. Segregation of figures by classes of occupation is more important for trade than for any of the other industries thus far considered. The Wisconsin bureau obtains separate figures for three groups of employes—office force, sales force, and other employes—although only the figures for the sales force are tabulated and published. This is done partly to secure a result which would be most likely to indicate changes in the volume of trade, but primarily in order that the data on earnings should represent a homogeneous group. While recognizing the value of obtaining the report in detail, the committee is not prepared to recommend that this segregation be requested generally in reports from trade establishments.

The extent to which commissions or premiums form a part of the wage payment, particularly in retail stores, creates difficulty in collecting and using information on the amount of wages paid. The payment of these additions to the basic wage is often delayed, so that the wages paid in a given week do not represent the full earnings of that week. On this account some employers have been reluctant to report wage figures. The results secured by the Wisconsin and Illinois bureaus, however, indicate that significant data on earnings can be obtained from trade establishments. The two curves in Diagram 12 show the changes in number employed and in total wages in retail trade as reported by the Wisconsin

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bureau. As already pointed out, these figures refer only to the sales force, where, if at all, the disturbing effect of premiums and commissions might be expected. Yet the curve for total wages is closely parallel to that for employment.

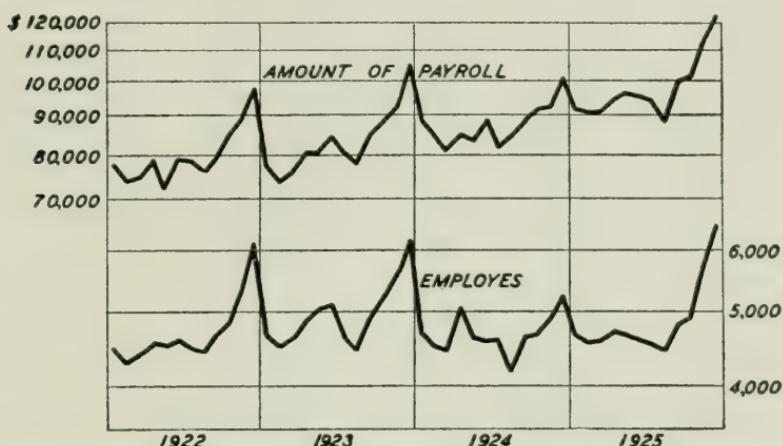


DIAGRAM 12.—NUMBER OF EMPLOYES AND AMOUNT OF PAYROLLS IN SELECTED RETAIL TRADE ESTABLISHMENTS IN WISCONSIN, 1922 TO 1925

The ratio background is used to permit comparison of relative changes. An upward trend is noticeable in the amount of payrolls, while the trend of employment is approximately level. The fluctuations of the two curves correspond closely, however.

AGRICULTURE

In the collection of employment statistics for agriculture, an important question is to decide which types of workers to include. Most farms have a small labor force, composed largely of home labor. In 1920, according to the census, there were about 6,400,000 farms in the United States and a farm population of 39 to 40 million persons; this is an average of about six persons living on each farm. About 10,683,000 persons were defined by the census as "gainfully employed" in agricultural occupations, or an average of less

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than two persons per farm.¹ Operating the 6,400,000 farms were about the same number of owners or managers, leaving a balance of 4,283,000 farm employes, of whom about 1,900,000 were reported by the census as working on the home farm. In other words, agricultural employes, not members of the employer's family, numbered only 2,383,000, slightly less than 0.4 persons per farm, and only 22 per cent of the total labor force on farms. During the crop season, this force is augmented by migratory labor, as well as by some labor from nearby towns. But family labor on the farm is itself greatly increased during the time of harvesting, so that even during that period hired labor may not exceed one-fourth of the total working force.

Since about three-fourths of the labor on farms is not hired labor, but members of the farmer's family, it follows that statistics of numbers hired and the amounts paid in wages will not properly measure the actual productive effort in agriculture. For this purpose, the owner, members of the family who take part in farming, and hired farm labor should all be included. For information concerning the farm labor market, on the other hand, data concerning hired hands and their earnings are needed. The significant employment report for farms is, therefore, one which includes both home labor and hired labor, but which differentiates between them.

A second problem relating to agricultural employment statistics is that of sampling adequately the immense number of small units. The relative similarity of farms reduces to a considerable extent the difficulty of such sampling. The range in the size of establishments in farming is small as compared with other industries, and the variation in em-

¹ This figure is probably much below the average for the year, owing to the date of the census enumeration (January 1). Some members of the farm family who are employed in farming during part of the year are otherwise employed in winter. Many young persons attending school in January are gainfully employed during the summer. In addition, the army of shifting or migratory farm labor is not on the farms in winter.

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ployment is to a large extent determined by such factors as weather and farming practice, which affect practically all farmers throughout a given crop area. It has been found by crop statisticians that relatively small samples yield reasonably good evidence of crop conditions for the entire country.¹

Probably only a very small proportion of the total number of farms, and these the larger ones, can be expected to report employment statistics. The Wisconsin bureau, the first to collect employment statistics for agriculture, used an extremely small sample—less than one-half of one per cent of the farms in the state. Through the Wisconsin Co-operative Crop Reporting Service, it obtained monthly reports of the number of persons employed from about 500 farms that were already reporting crop data, beginning in January, 1922. In presenting these figures the bureau stated that the larger farms predominated in the reporting group, and that the returns from so meager a sample did not necessarily reflect conditions for all farms in the state.

More recently the Division of Crop and Livestock Estimates of the United States Department of Agriculture has undertaken the collection of farm employment statistics for the country as a whole. It has been receiving some 10,000 reports per month, but even this number constitutes a small sample. These data are obtained from farmers making crop reports, and represent the larger farms. Three preliminary indexes based on these data are shown in Diagram 13. The collection, begun in October, 1923, is still in an experimental stage and current publication of these figures has not yet been made. If the experiment proves that reliable information can be assembled and the expense is not

¹ While the farms which make crop reports are larger than the average, they have been found to show tendencies to increase or decrease acreage which are representative of changes on all farms. Similarly, small samples are found to yield a satisfactory basis for estimating amount and value of crops, number of livestock on farms, and so forth.

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unreasonable, the bureau will probably continue to collect these data and will publish them currently. In that event, means can probably be worked out by which state bureaus may obtain employment information for agriculture in co-operation with the federal bureau, as is being done by state

NUMBER PER FARM

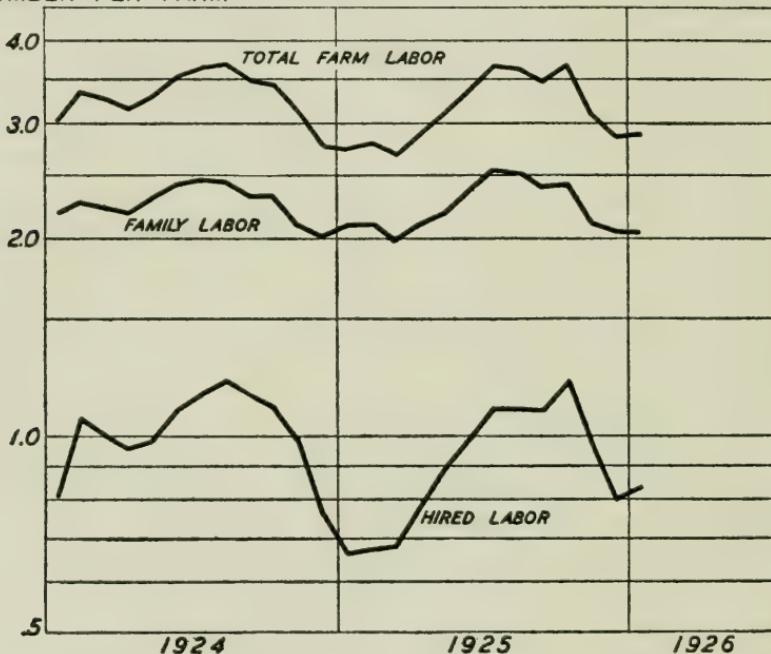


DIAGRAM 13.—PRELIMINARY INDEXES OF EMPLOYMENT ON FARMS IN THE UNITED STATES, JANUARY, 1924 TO JANUARY, 1926

The curves represent simple averages obtained from the reports of about 10,000 farms made monthly to the United States Department of Agriculture.

and federal bureaus of labor statistics in respect to factory employment.

In collecting its data on farm employment the Division of Crop and Livestock Estimates has used this simple form of inquiry:

HOW TO COLLECT FOR NON-FACTORY INDUSTRIES

Number of persons working on this farm, excluding household workers:

Family labor, including operator

- a. Number on March 1: _____
- b. Number on February 1: _____

Hired help, including monthly, day, and piecework hands

- a. Number on March 1: _____
- b. Number on February 1: _____

Figures for two consecutive months are asked for because the same farmers do not report each month, and owing to the number of reports handled no attempt can be made by the bureau to compare the records of individual establishments month by month, as is done in the collection of payroll data for other industries. Bureaus collecting for single states and dealing, therefore, with much smaller numbers of reports, might find this method feasible, and might be able to stimulate regular reporting. Regularity is especially desirable because, as the Wisconsin experiment indicated, there is apparently a tendency on the part of farmers to fail to report when there has been no change or a decline in the number of hands they employ. That regular reports from a sufficient number of identical farms should be obtained is, of course, to be recommended, but for a national bureau to maintain an identical list month after month would be possible only at very large expense.

The Division of Crop and Livestock Estimates does not collect information concerning amount of wages paid, with the employment figures. It does ascertain wage rates from crop-reporting farms at quarterly intervals, using the following form:

Average wages being paid to hired farm labor in your locality:

- a. By the month with board: _____
- b. By the month without board: _____
- c. By the day with board (including average daily earnings of piece-workers): _____
- d. By the day without board (including average daily earnings of pieceworkers): _____

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Information concerning wages actually paid on farms, although distinctly desirable in order to supplement the less definite information concerning wage rates, is not easily obtainable at present. The Wisconsin bureau in its experiment attempted to obtain reports of the amount of wages paid, but abandoned this part of the inquiry after the first month because of the clearly unsatisfactory nature of the returns, the varying methods of paying partly in kind, and other difficulties.

OTHER INDUSTRIES

Collection of payroll statistics, or statistics of employment and earnings, appears to be possible for other industry groups, such as logging, hotels and restaurants, professional service, and the different branches of public service; but, as already pointed out, for most parts of the country the information for these is distinctly less important than for the groups already discussed in this chapter.

In logging special problems are introduced because of the frequent shifting of the place of occupation and especially because of the failure of many operators to keep records from which the report can be made up readily. Employment in logging fluctuates widely, and in many parts of the country organizations operating in the winter disappear entirely in the summer. Both the Wisconsin and the Canadian bureaus have measured employment in this industry by means of employers' reports. As in its inquiry to farms, the Wisconsin bureau has found difficulty in collecting satisfactory data concerning wages from the logging concerns.

From large hotels and restaurants, it is possible to collect regular employment reports similar to those obtained from manufacturing concerns. The report should probably call for both the number employed and the amount of wages

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paid. In interpreting the wage figure, however, it must be borne in mind that a large proportion of hotel and restaurant employes receive board and tips as part of their compensation. Average wages should accordingly not be computed from the data reported, as a measure of the amount of wages received by workers in this industry. The reports of wages paid would still be valuable, however, as a supplementary measure of employment fluctuation. Because many women are at work in hotels and restaurants, segregation of the data by sex is desirable. It is probably not necessary to attempt representation of small hotels and eating places, although combination of data for large and small establishments like that suggested for large and small stores might be feasible. Hotels which operate in summer or winter and are closed during the rest of the year present a special problem in planning a sample. As with other seasonal industries, a due proportion of such establishments should be included in the sample throughout the year, their employment and wages being recorded in the aggregate as zero in months in which they are not operating.

For measuring changes in employment in professional or domestic service, employers' reports would seldom be a profitable source of information, except perhaps for teachers. For teachers the month-to-month fluctuations in employment are not important. For the other professional groups and for domestic service, employment is usually too scattered to make representative collection practicable.

For public service, that is, service in the various departments of local, state, and federal governments, employment data are as yet rarely collected currently. Short-time fluctuations in employment in this group are not extreme, but the number of persons engaged is large and increasing. Collection of the data should not present great difficulties here.

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In selecting a sample for public service, consideration should be given to the number of persons engaged in different branches of public service, including administration offices; police, fire, park, and sanitary departments; public libraries; and so on.

CHAPTER VI

HOW TO TABULATE PAYROLL STATISTICS

BEFORE tabulation can be undertaken the data returned on a questionnaire require editing. Even with a simple form of schedule calling for but few facts, misstatements are to be expected when the returns are made by a large number of different persons. Typographical errors often occur. Occasionally these are due to inaccurate addition of parts of the payroll, or to omission of figures for one or more departments of a reporting plant. Sometimes the meaning of questions is misunderstood. Thus the federal Bureau of Labor Statistics discovered in 1921 that certain automobile establishments had misinterpreted the question calling for the number of employes on the payroll in its questionnaire, and for several months during the period of declining employment had reported not only employes at work and receiving wages, but also laid-off employes whose names had been retained on the payroll because it was anticipated that they would later resume work with the concern.¹

EDITING

Frequently errors occur which are large enough to affect the interpretation of important parts of the tabulation and seriously distort the resulting figures. The important mistakes can usually be discovered by analyzing the component items of the report and by comparing the current statement with figures previously reported by the same plant. It

¹ *Monthly Labor Review* (U. S. Bureau of Labor Statistics), Vol. XIII, p. 375. August, 1921.

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should be noted that when the data are subdivided by sex, for office and shop, or otherwise, and a total figure is also reported, a useful check on the accuracy of the report is afforded.

Detailed comparison with previous figures is of the utmost importance. Often it is necessary to make the comparison with figures of the preceding year or two years, as well as with those of the preceding month or two months. For example, where brick-yards shut down in the fall and reopen in the spring, or in the case of establishments subject to violent seasonal changes, as in the canning, millinery, and clothing industries, it is essential to make year-to-year comparisons.

When examination reveals omission of needed information or important mistakes that cannot be corrected from other data, a special request may be necessary for a second report. These inquiries annoy both compiling and reporting offices, however, and should not be made except for important items. In order that replies to such requests may be received in time for use, editing should be done well in advance of the date fixed for tabulation.

Occasionally, reported figures are not to be used for tabulation, even though accurate. When the reported payroll period covers the time of taking inventory or other temporary closing of a plant which renders the report not typical of the current month, it is generally agreed that greater accuracy is obtained by tabulating the figures reported for the month preceding.¹ Any such substitutions of data should be made

¹ This is the practice of several of the bureaus now compiling payroll data. It introduces small error if substitution is made in the case of one or two returns only. Obtaining a report for another period in the month would, of course, give greater accuracy but might necessitate delay. Where temporary closing affects a large number of plants, substitution of figures by the collecting office is not warranted. The questionnaire of the Canadian bureau, it may be noted, calls for the number employed on the last day of the month, and its figures collected as of December 31 regularly show the effect of inventory and holiday closing at the end of December.

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only in the process of editing and care should be taken that assumed data are not used with great frequency.

The editing staff should consider not only accuracy and completeness, but also legibility of the data. It should have sole power to exercise judgment concerning figures reported, so that the tabulating process which follows may be purely clerical and may proceed without interruption. The editing should be done by a responsible member of the statistical staff, and preferably by the same person each month, since familiarity with successive reports is essential to clear judgment. All editorial changes should be entered on the schedule in such manner that they can be recognized as distinct from the original report.

In editing, it should be recalled that doubtful figures that would make comparatively little difference in the measurement of changes in the total sample may be of the greatest importance for separate industries or separate localities. If the employment index to be constructed is to be sensitive to changes in labor conditions, it is necessary that care be taken with even minute details.

CONTINUOUS RECORDS OF REPORTING FIRMS

Under some circumstances tabulation of the data can be made directly from the edited questionnaires. This is possible when the questionnaires contain figures for two months for which comparison is to be made, as in the schedule used by the federal Department of Agriculture, or where reports are obtained each month from the same firms, so that one month's tabulation can be compared directly with the tabulations for previous months. Permanent records, however, to which are transferred the figures reported month by month by each firm, are desirable, and tabulation can be made more conveniently from them than from the current reports. These permanent records are used to compare current data with

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previously reported figures, as described in the preceding section, and the transfer of the data to the permanent record card can be made most conveniently at the time editing is done.

These continuing records are usually kept on filing cards large enough to contain data for one or two years. Several forms now in use are reproduced in the Appendix. At the top of the card should be recorded the name, address, industry, and file number of the reporting firm, together with any special notes as to the manner in which the questionnaire is to be sent out or peculiarities concerning the report, including in particular the length of the payroll period. The data for each month are entered on one line across the card. Columns should be provided for all the information on the questionnaire which is subject to tabulation, and space left for notes explaining unusual circumstances in any month or for a record of requests for complete or corrected data. If necessary the back of the card can be used. Some bureaus, but not all, calculate for each plant separately, as well as for the whole industry, the average earnings and percentage of change in the number of workers employed and in the amount of the payroll; it is desirable that these calculations, when made, be entered on the permanent record. Computing these figures for each plant, and recording them, may reveal errors in the reported data, and may also be valuable as a means of interpreting the tabulated figures.

Some plants report for a payroll period longer than a week, and the item showing total wages paid must be reduced to a weekly rate before tabulating it with the weekly figures of other plants.¹ The calculated weekly rate should be entered on the permanent record. Special care is necessary to insure

¹ Sufficient accuracy is obtained if the monthly wage is corrected to a weekly rate by dividing by 4.3 (or more conveniently if a computing machine is used, by multiplying by 0.23). A half-monthly payroll is reduced to one week by dividing by 2.15 (or multiplying by 0.46).

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that the correction of those figures which cover more than one week is made, and some special sign to identify these cards is desirable.

The record cards should be filed by industries. A scheme of file numbers can be arranged corresponding to the classification used in tabulating, so that the cards when placed in numerical order are in proper arrangement for tabulation. A decimal system, such as that adopted by the Illinois bureau, can be used to indicate industrial, geographical, and other groupings.¹ Numerals can be used to indicate the industrial classification, and the color of the card or lettered tabs may show size and location. The file or classification number should be conspicuously placed on the record card and should also be entered with the name and address of the firm on the questionnaire before it is sent out.² Questionnaires and record cards can then be readily matched by means of the file numbers.

WHAT TABULATIONS SHOULD BE MADE

The several tabulations suggested for regular monthly analysis of employment and earnings may be listed as follows.³ Those in heavy type are of first importance; the others in the opinion of the committee are desirable in so far as the data can be obtained and the resources of the office permit their regular tabulation.

¹ In the Illinois system digits to the left of the decimal point indicate the industrial classification, and digits to the right the city. Letters, or an additional numeral following another point, can be used to indicate the size-group to which the establishment belongs. Other code combinations are possible. Thus, in a code based on the classification of industries presented in Table 5, the number 31a.10A would identify a firm making cotton cloth. This firm would fall in the cotton goods group of the fiber and fabric division of textiles and textile products. The number "10" following the period would indicate the firm's location in a particular city, and the letter "A" its size classification.

² If the questionnaires are addressed by means of an addressograph, the plate should contain the file or code number, as well as the firm's name and address.

³ The computations, based on these tabulations, showing percentage of change or index numbers are discussed in the following chapter.

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1. Number of employes by industry.
2. Number of employes by locality, subdivided by industry.
3. Number of employes by industry, subdivided by sex.
4. Number of employes by industry, subdivided by size of establishment.
5. Amount of payroll by industry.
6. Amount of payroll by industry, subdivided by sex.
7. Amount of payroll by industry, subdivided by size of establishment.
8. Amount of payroll by locality, subdivided by industry.
9. Average earnings by industry.
10. Average earnings by industry, subdivided by sex.

All of the three items, "number of employes," "amount of payroll," and "average earnings," as well as the information returned in answer to the supplementary questions concerning changes in wage rates and extent of operation of plants, are subject to classification (1) by industry, (2) by locality, and (3) by size of establishment. The most important differentiation of the data is that by industries, and tables showing industrial classification are needed for all of the data which are tabulated. Cross-classification of both "number of employes" and "amount of payroll" under each industry by sex is desirable if the reports permit it. Cross-classification of both items regularly by size of concern is also desirable for the information of the office and for at least occasional publication.¹

Tabulation to show industrial classification by localities is advisable. In issuing national figures, full industrial classification of "number of employes" and "amount of payroll" is needed for each important geographical district. Within states there is less occasion for geographical classification of

¹ The size-groups used for all industries by King (see page 96) were 1 to 20 employes; 21 to 100; and over 100. The Illinois bureau has adopted the following size-classes: 100 employes and less; 101 to 250; 251 to 500; 501 to 1,000; over 1,000. It must be borne in mind that large-scale production has advanced much farther in some industries than in others; this fact makes necessary a fairly fine grouping by size if truly significant findings are to be obtained. The classification used by the Bureau of the Census is: 1 to 5; 6 to 20; 21 to 50; 51 to 100; 101 to 250; 251 to 500; 501 to 1,000; over 1,000.

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the wage data, but tabulation of the number of workers employed by cities, or by industrial districts when single cities are not industrial units, is recommended even though it may not be found practicable to make public more than the aggregate figures, or figures for the more important industries, of each locality.

From the tabulations of "number of employes" and "amount of payroll," average earnings may well be computed for each industry. These are of considerable use in watching the course of earnings over a period in any given industry, although they have to be interpreted cautiously. The wide difference between the wages of men and women makes calculation of average earnings by sex important if the figures are to be used as indicating differences in wages between industries or between particular establishments. Variation in the amount of part-time or overtime work, another source of difficulty in interpreting these figures, has already been discussed briefly on page 63.

Certain supplementary tabulations may be made either for the aid they give in interpreting earnings and employment or for their own independent significance. For example, tabulating the extent of operations by industries is useful. Whether the industries are operating "overtime," "full-time," "part-time," or are "closed down" may be shown by counting either the number of firms reporting each degree of operation, or the number of employes in each group so reporting. A record of the number of employes working the specified proportion of normal time is likely to give the more significant result, unless some segregation by size of establishment is made.

Changes in wage rates may also be tabulated by industries. Such a table would show the number of firms reporting "increase," "decrease," and "no change" in wage rates in the month since the last report.

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CLASSIFICATION OF INDUSTRIES

The classification of industries which should be used for tabulating payroll data depends on the use which is made of the figures. Two principal uses need consideration in this connection. The first is to supply information to persons who are interested primarily in general movements, who wish to know whether industrial and living conditions are becoming better or worse, and who use employment figures for the light which they shed upon the activity of business or upon the purchasing power of the population. This group is in general less interested in minute segregation of different types of business than in changes in employment within given areas or broad groups of industries. The type of classification suited to this purpose depends upon the economic significance of changes in different groups of industries. For example, the person examining employment statistics from this point of view does not need to distinguish closely between the different types of textiles. In fact, minute subdivision may tend to obscure rather than to reveal the significance of the figures for him.

The second use of employment data may be illustrated by its service to the business man who wishes to compare the status of his concern with that of the industry of which his business is a part, or his own industry with related industries. For this purpose it is necessary to have the information for definite lines of business. Exact comparisons of this sort will be desired also for purposes of research into the problems of seasonal and cyclical fluctuations in employment and other aspects of business. These uses require comprehensive tabulation of employment by specific industries in order that precise comparisons may be made. The classification for such purposes cannot be too detailed.

In tabulating employment statistics it seems to be neces-

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sary to bear in mind the needs of both these groups. The classification should be so detailed that it will enable the business man to compare his own situation with that of others, and yet the broad classification should be so clear as to enable those interested in general business conditions to summarize quickly the results of the survey. These requirements seem to indicate the wisdom of tabulating the results of current employment surveys both by major industry groups and by particular industries.

NEED OF A STANDARD CLASSIFICATION OF INDUSTRIES

From whatever point of view the person using employment statistics approaches the subject, it should be possible to compare or combine the figures for different states or other territorial divisions. Interstate, interregional, and international comparisons to reveal differences in business activity, purchasing power of consumers, or wage tendencies are frequently desired. Rough comparisons are possible even if data are classified according to different schemes, but if more than general comparison is to be made, it is essential that there should be substantial agreement among the bureaus as to terminology, definitions of industries, and method of combining unit or elementary industries into minor and major industry groups. It is therefore desirable that, in so far as is feasible, a standard classification of industries should be adopted. Whatever standard classification might be adopted would have to be modified as to the breadth or detail of its application in particular bureaus, but this would not prevent full agreement in respect to nomenclature and the grouping of industries.

At present there is extreme lack of uniformity in this respect. Most of the bureaus publishing employment statistics have adopted a classification which conveniently breaks up the sample without giving close attention to

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definition of the groups or to the possibility of comparing the tabulated data either with the employment statistics collected by other bureaus or with other industrial statistics.

The confusion that now exists may be illustrated by comparing corresponding portions of the classification of manufacturing industries now used by three bureaus. The classi-

TABLE 3.—CLASSIFICATIONS OF "METAL" INDUSTRIES USED BY THREE BUREAUS IN PUBLISHING PAYROLL EMPLOYMENT STATISTICS

Illinois Department of Labor	Philadelphia Federal Reserve Bank	Wisconsin Industrial Commission
Metals, machinery and conveyances	Metal manufactures	Metal
Automobiles and ac- cessories	Automobiles, bodies, and parts	Automobiles
Agricultural imple- ments	.....	.....
Cars and locomotives	Car construction and repair	Railroad repair shops
Electrical apparatus	Electrical machinery and apparatus	.....
Machinery	Engines, machines, and machine tools	Machinery
.....	Foundries and machine shops	Foundries and machine shops
Cooking, heating, venti- lating apparatus	Heating appliances and apparatus	Stoves
.....	.....	Aluminum and enamel ware
Iron and steel	Iron and steel blast fur- naces	Pig iron and rolling mill products
Sheet metal work and hardware	Iron and steel forgings	.....
.....	Steel works and rolling mills	.....
Tools and cutlery	Structural iron works	Structural iron work
Instruments and appli- ances	Shipbuilding	.....
Watches, watch cases, clocks and jewelry	.....	.....
Brass, copper, zinc, babbitt metal	Non-ferrous metals
.....	Miscellaneous iron and steel products	Other metal products

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fication of metal industries used by these bureaus is given in full in the three columns of Table 3, the order of the subordinate items having been changed where necessary to facilitate the comparison. The variation in the titles of the groups is not particularly confusing, for brief inspection shows that the same range of industries is included under each title. Difficulties arise, however, when attempt is made to compare the subordinate groups. In no instance is the same terminology used in all three lists. Yet several of the items, though different in name, are probably strictly comparable. For example, "Automobiles" in one list probably means the same as "Automobiles and accessories" and "Automobiles, bodies, and parts" in the other two. "Cars and locomotives" in the first column probably includes locomotive repair shops; and "Car construction and repair" in the second column probably includes locomotive construction and repair as well, so that these two items may well be comparable. In the third column only "Railroad repair shops" are specified, and it is possible but by no means certain that this item is not comparable with the other two. The important item "Foundries and machine shops" occurs in two lists, but is absent in the other; and since this other list includes no "miscellaneous" item, there is doubt as to whether foundries and machine shops are grouped under "Machinery" or under "Iron and steel." "Electrical machinery" occurs in only one list; in another, electrical machinery plants are probably classified as "Machinery," while in the other they may be included either under "Electrical apparatus" or under "Machinery."

Some of the confusion illustrated by this table is merely a matter of terminology. Were there agreement as to industrial nomenclature, this part of the difficulty would be removed. More serious confusion arises, however, from fortuitous combinations of unit industries, which may or

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may not be indicated by the titles of the items. Many of the items in this table do not represent separate industries at all but, instead, combinations of industries more or less related, which may be combined properly for some purposes but not for others. These combinations are made to reduce the labor of tabulation or the expense of publication, or in some instances to prevent disclosing facts concerning particular firms through publication of the data in too great detail. But each of these purposes would be served as well if the practice were adopted of combining the smaller industries, and those for which separate data cannot be made public because they are dominated by one concern, in a "miscellaneous" item within each division of the classification.

This practice of combining single industries in more or less arbitrary groups not only tends to make the statistics of different bureaus less comparable because of the variety of combinations made, but also impairs the value of the data by obscuring significant changes in employment. When the several industries combined do not undergo parallel fluctuation in activity, an increase in one may be offset by a decrease in another, with the result that the combined figures do not represent conditions in any. For this reason, and because the data are needed in detail, it is urgently recommended that both in tabulating and in publishing employment statistics as great detail of classification as possible be preserved, and that when curtailment and combination is necessary it be done through use of "miscellaneous" items.

The problem of industrial classification is international. This is illustrated in Table 4, in which are compared portions of the industrial classifications used by the United States Bureau of Labor Statistics and the Canadian Bureau of Statistics in publishing employment statistics obtained from payrolls.

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It will be seen that comparison of the payroll statistics of these two national bureaus is possible for only a few of the industries included in the two lists. This table illustrates the difficulty arising from differences in making up the

TABLE 4.—COMPARISON OF CORRESPONDING PORTIONS OF CLASSIFICATIONS OF MANUFACTURING INDUSTRIES USED BY UNITED STATES BUREAU OF LABOR STATISTICS AND CANADIAN BUREAU OF STATISTICS IN PUBLISHING PAYROLL EMPLOYMENT STATISTICS

United States Bureau of Labor Statistics	Canadian Bureau of Statistics
Iron and steel and their products	Iron and steel products
Iron and steel	Crude, rolled, and forged products
Structural iron work	· · ·
Foundry and machine-shop products	Foundry and machine-shop products
Hardware	Iron and steel fabrications, not elsewhere stated
Machine tools	Machinery, other than vehicles
Steam fittings and steam and hot-water heating apparatus	Heating appliances
Stoves	· · ·
Vehicles for land transportation	Land vehicles
Automobiles	· · ·
Carriages and wagons	· · ·
Car building and repairing, electric railroad	· · ·
Car building and repairing, steam railroad	· · ·
· · ·	Agricultural implements
· · ·	Steel shipbuilding and repairing
· · ·	Others
Metal products, other than iron and steel	Non-ferrous metal products
Stamped and enameled ware	· · ·
Brass, bronze and copper products	· · ·
Miscellaneous industries	Electrical apparatus
Agricultural implements	· · ·
Shipbuilding, steel	· · ·
Electrical machinery, apparatus, and supplies	· · ·
Pianos and organs	Musical instruments
Rubber boots and shoes	Rubber products
Automobile tires	

major groups. Thus the two "iron and steel" groups, although similar in title, cannot be compared fairly, because in the Canadian table such important items (or groups of items) as "Land vehicles," "Agricultural implements," and

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“Steel shipbuilding” are included, whereas in that for the United States they are placed in two other major groups. To some extent this difficulty could be overcome through the combination of the subordinate items by the person using the data, but differences in terminology and uncertainty as to agreement in definition of items would still remain. Thus, whether “Electrical apparatus” in one list is equivalent to “Electrical machinery, apparatus, and supplies” in the other, is at best doubtful.

Unfortunately, agreement between these two classifications could not readily be brought about, for each has been adopted with a view to effecting co-ordination between the employment data and other industrial statistics in the same country. This points to the urgency of international agreement on a general industrial classification acceptable for different types of industrial statistics. To this need the International Labour Office has devoted much attention and study.¹ Thus far, however, little has been accomplished beyond clear portrayal of the difficulties in the way of harmonizing the numerous classifications now in use, many of which, because they are the framework of long series of statistics, could not be abandoned except at great cost. The work already done has indicated the possibility of agreement on the main groups of industries, even though standardization in the subdivisions is not yet attainable. In 1923 a standard classification for the main divisions of industry was proposed by the International Labour Office to the International Conference of Labour Statisticians meeting under its auspices. This scheme of classification is included in Table 6, page 126.

¹ Several reports dealing with the subject have been published. See International Labour Office: *Methods of Compiling Statistics of Unemployment*. Series C, No. 7, Geneva, 1922; *Systems of Classification of Industries and Occupations*. Series N, No. 1, Geneva, 1923; (Reports of) International Conference of Labour Statisticians. Series N, No. 4, Geneva, 1924; and Series N, No. 8, Geneva, 1925.

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PROPOSED CLASSIFICATION OF MANUFACTURING INDUSTRIES

While international agreement upon a detailed classification of industries seems remote, there are no large obstacles to prevent the state and federal bureaus in this country from agreeing upon a common industrial classification for employment statistics. This committee believes that the basis for any standard classification of manufacturing industries should be the classification used by the United States Bureau of the Census. The census reports have already been suggested as the basis upon which the sample for manufacturing industries should be planned, and it has been pointed out that the census statistics on employment furnish a reliable means of checking the accuracy of the currently collected data. The Census Bureau classifies manufacturing industries in great detail; its reports furnish a definition of terminology used; and the bureau itself constitutes a source of authority to which to appeal when it is difficult to classify a particular establishment. Adoption of the census terminology and method of classifying establishments in unit industries is strongly recommended. The committee has proposed, however, for employment statistics a classification which differs somewhat in its major groups from that of the Census Bureau.¹ The alternative grouping proposed by the committee is shown in Table 5, which gives the average number of persons employed in each of the individual industries in three census years² in order to indicate their relative importance in the United States as a whole.

¹ This classification was prepared prior to the Census Bureau's revision of its classification for use in the 1923 census of manufactures. The new major groups of the census classification, which are shown in Table 6, approximate much more closely the grouping proposed by this committee than do those of the previous classification of the Census Bureau.

² *Census of Manufactures, 1923—Summary for the United States by Industries, Geographic Divisions, and States.* Washington, Government Printing Office, 1925, pp. 7-36. In a few instances the numbers are obtained by combining industries given individually in the census classification.

TABLE 5.—PROPOSED NOMENCLATURE AND CLASSIFICATION OF
IMPORTANT MANUFACTURING INDUSTRIES

Industries	Thousands employed		
	1919	1921	1923
I. Metals and metal products (other than vehicles) (Ferrous metals)			
1. Crude iron and steel			
a. Blast furnaces	42	19	37
b. Steel works and rolling mills	375	236	388
c. Structural ironwork	44	33	52
d. Other			
2. Heating and cooking apparatus			
a. Steam fittings, and steam and hot-water heating apparatus	37	31	44
b. Stoves and furnaces	43	32	50
c. Other			
3. Machines and machinery			
a. Foundries	105	321	499
b. Machine shops	270	21	33
c. Machine tools	53	36	48
d. Engines, steam, gas and water	78	161	235
e. Electrical machinery and apparatus	212	31	36
f. Textile machinery	32	30	31
g. Agricultural machinery and implements	54		
h. Other			
4. Miscellaneous metal products			
a. Tools and cutlery	20	14	17
b. Hardware	46	35	52
c. Typewriters, cash registers, and calculating machines	32	23	30
d. Sewing machines and attachments	19	13	13
e. Other			
(Non-ferrous metals)			
5. Base metals			
a. Smelting and refining	42	20	41
b. Brass, bronze, and copper products	75	40	65
c. Copper, tin, and sheet ironwork	28	25	29
d. Tinware	34	23	31
e. Aluminum manufactures	11	10	16
f. Stamped and enameled ware	34	24	35
g. Other			
6. Precious metals			
a. Clocks, watches, and their materials	29	23	26
b. Jewelry	31	23	26
c. Silverware and plated ware	16	15	17
d. Other			
II. Vehicles			
1. Steam and electric railroad vehicles			
a. Locomotives and cars	82	65	111
b. Railroad repair shops	516	418	523

TABLE 5.—*Continued*

Industries	Thousands employed		
	1919	1921	1923
2. Motor vehicles, including bodies and parts			
a. Automobiles	211	144	241
b. Automobile bodies and parts	133	69	164
c. Automobile repairing	55	—	—
d. Airplanes	4	1	3
e. Other			
3. Ships			
a. Steel	344	93	62
b. Wooden	43	13	
4. Other			
III. Textiles and textile products			
1. Textile fibers and fabrics			
a. Cotton goods	431	412	472
b. Woolen and worsted goods	167	162	195
c. Silk goods	127	121	125
d. Carpets and rugs	23	23	35
e. Dyeing and finishing textiles	56	52	63
f. Cordage and twine	18	15	16
g. Hats, fur-felt	19	14	17
h. Other			
2. Textile products			
a. Knit goods	173	162	194
b. Men's clothing	175	165	195
c. Women's clothing	166	145	133
d. Men's shirts and furnishings	70	71	81
e. Millinery	51	54	54
f. Corsets	18	17	16
g. Other			
IV. Food and related products			
1. Animal food products			
a. Slaughtering and meat packing	161	117	133
b. Canning and preserving fish and oysters	12	8	9
c. Butter and cheese	22	22	34
d. Condensed and evaporated milk	14	9	
e. Ice cream	19	20	23
f. Other			
2. Vegetable food products			
a. Flour and grain-mill products	45	35	35
b. Bread and other bakery products	142	149	163
c. Sugar, crude and refined	36	32	26
d. Confectionery	76	61	63
e. Canning and preserving fruits and vegetables	78	52	73
f. Other			
3. Beverages			
a. Alcoholic beverages	37	20	30
b. Mineral and soda waters	17	14	
c. Other			

TABLE 5.—*Continued*

Industries	Thousands employed		
	1919	1921	1923
4. Tobacco products			
a. Cigars and cigarettes	139	133	130
b. Other			
V. Stone, clay, and glass products			
1. Stone products			
a. Marble and stonework	33	30	40
b. Lime and plaster	17	15	22
c. Cement	26	26	35
d. Other			
2. Clay products			
a. Brick, tile, terra cotta, and fireclay products	77	69	103
b. Pottery	28	28	37
c. Minerals and earths	14	7	9
d. Other			
3. Glass products			
a. Glass	78	55	73
b. Other			
VI. Lumber and its products			
1. Crude lumber products			
a. Lumber and timber products	481	364	496
b. Planing mill products	87	78	103
2. Finished lumber products other than vehicles			
a. Wooden furniture	140	124	168
b. Musical instruments			
Pianos and organs, and materials	36	24	34
Phonographs and graphophones	29	18	20
c. Wooden containers	61	47	56
d. Other			
VII. Chemical products			
1. Chemicals and acids	76	49	77
2. Drugs and medicines	34	25	28
3. Fuels			
a. Coke, other than gas-house	29	16	28
b. Gas, illuminating and heating	43	35	42
c. Petroleum refining	59	63	67
4. Animal and vegetable oils			
a. Cotton-seed oil and cake	27	16	13
b. Other			
5. Turpentine and rosin	28	27	34
6. Fertilizers	26	17	19
7. Paints and varnishes	22	18	23
8. Photographic apparatus and materials	13	11	10
9. Soap and cosmetics	26	22	25
10. Ammunition and explosives	32	13	17
11. Ice, manufactured	30	24	27
12. Other			

TABLE 5.—*Continued*

Industries	Thousands employed		
	1919	1921	1923
VIII. Leather products			
1. Leather tanning, currying, and finishing	72	49	60
2. Leather boots and shoes	230	196	240
3. Furs and fur goods	19	16	20
4. Other			
IX. Rubber products			
1. Rubber tires and tubes	—	55	74
2. Rubber boots and shoes	33	24	29
3. Other			
X. Paper and printing			
1. Paper and paper products			
a. Paper and wood pulp	114	105	121
b. Paper containers	68	58	71
c. Other			
2. Printing and publishing and related industries			
a. Printing and publishing periodicals	120	108	} 246
b. Printing and publishing, book and job	123	121	
c. Lithographing, engraving	23	21	24
d. Bookbinding and blank-book making	20	17	21
e. Other			

This proposed grouping includes most of the elementary industries of the census classification in which more than 15,000 wage-earners were recorded in the censuses of 1921 and 1923, as well as some additional industries which have special significance in certain states. This divides the classification into 10 major groups of industries. How the major divisions in this classification compare with those of the Census Bureau, and with those proposed by the International Labour Office¹ is shown in Table 6.

¹ The scheme of classifying the major divisions of manufacturing industry proposed by the International Labour Office to the International Conference of Labour Statisticians in 1923 was not adopted. The International Labour Office has since, at the request of the Conference of Labour Statisticians and in collaboration with the Economic Section of the League of Nations, prepared a provisional basic list of 222 industries as a step toward the adoption of an international classification. (International Labour Office: Report of Second International Conference of Labour Statisticians. Series N, No. 8, Geneva, 1925, p. 40.)

TABLE 6.—COMPARISON OF SCHEMES OF CLASSIFICATION OF MANUFACTURING INDUSTRIES OF THE CENSUS BUREAU AND THE INTERNATIONAL LABOUR OFFICE WITH THAT PROPOSED BY THIS COMMITTEE

Census Bureau	Classification proposed by this committee	International Labour Office
III. Iron and steel and their products, not including machinery Crude iron and steel and rolled products Other iron and steel products XII. Machinery, not including transportation equipment X. Metals and metal products, other than iron and steel	I. Metals and metal products (other than vehicles) 1. Crude iron and steel 2. Heating and cooking apparatus 3. Machines and machinery 4. Miscellaneous metal products 5. Base metals 6. Precious metals	III. Metal industry (other than precious metals), including primary processes, founding, and secondary processes IV. Manufacture of machinery and miscellaneous metal products, including cutlery, tools, utensils, etc. (Cf. XV below)
XIV. Transportation equipment, air, land, and water XV. Railroad repair shops	II. Vehicles 1. Steam and electric railroad vehicles 2. Motor vehicles, including bodies and parts 3. Ships 4. Other	V. Construction of boats, ships, and vehicles for land and air transport
II. Textiles and their products Textile-mill products Wearing apparel made from purchased fabrics Other articles made from purchased fabrics	III. Textiles and textile products 1. Textile fibers and fabrics 2. Textile products	X. Textile industry XI. Clothing industry, including hosiery and boots and shoes
I. Food and kindred products Animal products Vegetable and mineral products XI. Tobacco manufactures	IV. Food and related products 1. Animal food products 2. Vegetable food products 3. Beverages 4. Tobacco products	XII. Preparation and manufacture of foods, drinks, and tobacco
IV. Stone, clay, and glass products Industries using stone as a material Industries using clay as a material Glass and manufactures of glass	V. Stone, clay, and glass products 1. Stone products 2. Clay products 3. Glass products	VI. Manufacture of bricks, earthenware, glass, etc.
IV. Lumber and allied products	VI. Lumber and its products 1. Crude lumber products 2. Finished lumber products other than vehicles	II. Woodworking industry II. Furniture manufacture

VIII. Chemicals and allied products

V. Leather and its manufactures
Leather, tanned, curried, and
finished

Finished products of leather

X. Manufacture of chemicals and allied
products

XII. Manufacture of leather and skins
(other than boots, shoes and
gloves) and of rubber and its
products
(Cf. XI above)

VII. Chemical products

VI. Rubber products
Boots and shoes, rubber
Rubber tires and inner tubes
Rubber goods, not elsewhere clas-
sified

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VII. Paper and printing
Paper and wood pulp
Manufactures of paper
Printing and publishing and al-
lied industries
Other industries related to print-
ing and publishing

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X. Manufacture of chemicals and allied
products

VIII. Leather products
1. Leather tanning, currying, and
finishing
2. Leather boots and shoes
3. Furs and fur goods
4. Other

IX. Rubber products
1. Rubber tires and tubes
2. Rubber boots and shoes
3. Other

X. Paper and printing
1. Paper and paper products
2. Printing and publishing and re-
lated industries

XII. Manufacture of paper, bookbinding
and printing, including photog-
raphy

XIV. Manufacture of paper, bookbinding
and printing, including photog-
raphy

XV. Manufacture of paper, bookbinding
and printing, including photog-
raphy

XVI. Construction of buildings, and the
making and repairing of roads,
railways, bridges, canals, etc.

XVII. Production and transmission of gas
and electricity, and the supply of
water and water power

XVIII. Manufacture of scientific and musi-
cal instruments, clocks and
watches, precious metals and
stones

XIX. Other manufacturing industries, in-
cluding those working in materials
such as bone, horn, ivory, cellu-
loid, etc., and those manufacturing
various products, e.g., toys, pen-
cils, brooms and brushes, artificial
flowers, etc.

XIII. Musical instruments and phono-
graphs

XIV. Miscellaneous industries
(Including furs and fur goods, pro-
fessional and scientific instru-
ments, photographic materials,
etc.)

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SUGGESTED CLASSIFICATION OF NON-FACTORY INDUSTRIES

Less detailed classification is necessary for industries other than manufacturing. Unfortunately, except in mining industries, no classification is already justified by long use which can be recommended as a basis for standard practice. A standard classification of non-factory industries, based largely on classifications now being used by the three bureaus which have done most in the way of collecting payroll data for them, is proposed in Table 7, and the classifications used by these three bureaus are also included in the table for purposes of reference.

It is not suggested that all bureaus should use in full either of the two suggested classifications. Particularly that for manufactures is longer than would be practicable for publication by most bureaus. Comparable statistics, however, will result if the items for which separate statistics are published by each bureau are selected from these standard lists. The important rule is that the classification should be as definite and specific as possible in order that the person using the figures may know precisely what each item includes, and so be able to make accurate comparison or combination with other statistics. Definiteness and agreement as to the elementary items is more important than that the major divisions of the classification be used.

THE TABULATION PROCESS

If, in addition to the industrial classification, cross-classifications of the payroll data by sex, size of establishment, and locality are to be made and the necessary equipment is available, tabulation can best be done mechanically. This requires transfer of the information from the record cards to punch cards. The punch cards are then run through the tabulating machines for whatever combinations of data are

TABLE 7.—CLASSIFICATION OF NON-FACTORY INDUSTRIES

Suggested classification	Three classifications now in use	
	Wisconsin Industrial Commission	Illinois Department of Labor
Mining	Mining	Coal mining
Coal	Iron	
Iron ore	Lead and zinc	
Copper ore	Stone crushing and quarrying	
Lead and zinc ore		
Stone		
Oil and gas		
Gold and silver		
All other		
Transportation	Communication	Public utilities ^b
Steam railroads	Steam railways	Street railways
Electric railroads	Electric railways	
Taxicabs		
Express and trucking		Express, telephone and telegraph
Shipping		
Communication	Telephone and telegraph	Telephone
Construction	Construction	Building and contracting
Building	Building	Building construction
Highway	Highway	Road construction
Railroad	Railroad	Miscellaneous construction
Trade	Marine, dredging, sewer digging	Trade, wholesale and retail
Wholesale ^a		Wholesale drygoods
Retail trade		Wholesale groceries
Chain stores		
Department stores		Department stores
Special lines ^a		
Mail-order houses		Mail-order houses
Agriculture		
Logging		Agriculture
Personal service		Logging
Hotels and restaurants		Personal service
Barbers and hairdressers		Hotels and restaurants
Domestic		Barbers and hairdressers
Professional service		Domestic
		Professional service
		Miscellaneous professional services
		Teachers
		Canadian Bureau of Statistics
		Mining
		Coal
		Metallic ores
		Non-metallic minerals
		other than coal
		Transportation
		Steam railways
		Street railways and cartage
		Shipping and stevedoring
		Communication
		Telephones
		Telegraphs
		Construction and maintenance
		Building
		Highway
		Railway
		Trade
		Wholesale
		Retail
		Logging
		Services
		Hotels and restaurants
		Personal (chiefly laundries)
		Professional

• Subdivided as desired

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desired. By this means preliminary tests can be made conveniently and inexpensively to give advance information.

Most state bureaus are not equipped with tabulating machines, however, and so tabulation must usually be done by hand or by means of an adding machine. If the number of establishments included in the sample is not large, the data for each plant may be entered on the tabulating sheet for the two months under comparison in parallel columns. The proper totals are then footed, and the measure of increase or decrease calculated. For a large sample this cannot be done. Instead, additions are made directly from the data on the record cards by means of the adding machine, and the totals only are entered on the tabulation sheet. A listing and adding machine on which two or more columns of figures can be listed at once is desirable. By whatever method the tabulating is done, a check on the process should be made by reading back and comparing the figures taken from the record card.

TIME AT WHICH TABULATION SHOULD BE MADE

The date of tabulation should be made as early as possible. If data are collected for payroll periods including the middle of the month, it should be possible to arrange for the return of the questionnaires before the end of the month, except where firms use the monthly payroll. If any such firms are included, special effort should be made to obtain their reports promptly in order that tabulation may be made at the beginning of the following month. The committee endorses the practice now followed by a number of bureaus of fixing the date on which final tabulations are made. This necessitates special effort to get tardy data in, but it permits regularity of publication and so increases the reliance placed upon the published data by persons making use of them. One bureau makes the date of tabulation the first of the month, another

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the fifth. The date necessarily depends to some extent on the time required for transmitting the returns, and so upon the area covered by the survey.

Attention could well be given by the collecting bureau to the possibility of issuing a preliminary figure, perhaps for all industries without subdivision, in advance of the release of final figures. Actual test would probably show that even the first half of the returns would give a total which, compared with that for the same companies in the previous month, would indicate the current change almost as accurately as do the complete reports. A gain of only a week in the timeliness of the release would greatly enhance its value.

CHAPTER VII

HOW TO BUILD UP AN INDEX OF EMPLOYMENT OR EARNINGS

PREVIOUS chapters have discussed how best to collect and tabulate the crude data on employment and earnings in a variety of industries. The present chapter aims to show how these tabulated data can be effectively analyzed and marshaled by the collecting bureau, and how they can be used by the interested public. For convenience and simplicity, we confine attention in this chapter to manufacturing industries, as the methods involved in the analysis of other industries than manufacturing are essentially the same. For a similar reason we omit discussion of index numbers of aggregate earnings, the technique of which is analogous to that described below for an index of persons employed.

PERCENTAGES OF CHANGE BETWEEN TWO MONTHS

Before going on to show the advantages and procedure involved in the use of index numbers, it is desirable to show how else the data can be advantageously utilized. A simple and direct means of gaining useful information concerning factory employment is to compare the reported employment figures for the current month with those for a previous month. Usually the month immediately preceding, or the month corresponding to the current month in the previous year, is chosen as the base for comparison.

Table 8 shows the actual number of persons on the payrolls of certain identical establishments at two specified dates one month apart—November 15, 1920 and December 15,

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1920—as reported to the United States Bureau of Labor Statistics, together with the percentage of increase or decrease between those dates as computed by the bureau. These items are given for each of the 13 manufacturing industries for which the bureau was then collecting employment data. This and the table following were used by the bureau in reporting the results of its survey of employment for December, 1920.¹

Obviously, in making such a comparison in any month, reports for the same establishments must be used for each of the two months compared; otherwise any change disclosed might be due simply to accidental inclusion of more or larger firms in one month than in the other. The number of identical establishments reporting in *both* the current and the previous month is shown in the second column.

TABLE 8.—COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS REPORTING FOR NOVEMBER AND DECEMBER, 1920 TO THE UNITED STATES BUREAU OF LABOR STATISTICS

Industry	Number of establish- ments	Number on payroll		
		November	December	Per cent of increase or decrease
Iron and steel	98	145,565	132,616	— 8.9
Automobile manufacturing	40	95,550	89,836	— 6.0
Car building and repairing	54	61,156	58,681	— 4.0
Cotton manufacturing	56	54,021	52,115	— 3.5
Cotton finishing	16	9,954	9,830	— 1.2
Hosiery and underwear	62	20,576	16,011	— 22.2
Woolen	51	28,920	23,494	— 18.8
Silk	35	13,578	12,604	— 7.2
Men's ready-made clothing	49	20,039	16,279	— 18.8
Leather manufacturing	31	10,644	9,939	— 6.6
Boots and shoes	72	40,498	41,336	+ 2.1
Paper making	50	29,905	28,883	— 3.4
Cigar manufacturing	58	17,332	17,279	— 0.3

¹ *Monthly Labor Review* (U. S. Bureau of Labor Statistics), Vol. XII, p. 121, February, 1921.

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Such a comparison is useful in taking glimpses of employment changes over short periods. An intelligent employer, employee, or other interested observer could see that employment in all but two of the 13 industries had been decidedly on the wane during the interval. A person who happened to be familiar with the seasonal variation of activity in a particular industry could go a step farther and make a mental allowance which would enable him to judge how much of the change in that industry was attributable to season, how much to stock-taking, to labor trouble, or to some other exigency in either of the two months, and how much to a turn in the tide of fundamental business conditions. But this presupposes a good deal of knowledge and interpretative judgment on the part of the reader.

Such an observer could also gain useful information from Table 9, in which the comparison made is between cor-

TABLE 9.—COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS REPORTING FOR DECEMBER, 1919 AND DECEMBER, 1920 TO THE UNITED STATES BUREAU OF LABOR STATISTICS

Industry	Number of establish- ments	Number on payroll		
		December 1919	December 1920	Per cent of increase or decrease
Iron and steel	97	128,041	132,390	+ 3.4
Automobile manufacturing	42	133,950	91,420	-31.8
Car building and repairing	53	48,908	55,040	+13.8
Cotton manufacturing	56	57,375	51,226	-10.7
Cotton finishing	16	13,295	9,830	-26.1
Hosiery and underwear	56	30,266	14,719	-51.4
Woolen	51	49,391	23,494	-52.4
Silk	37	17,137	13,142	-23.3
Men's ready-made clothing	45	25,893	16,049	-38.0
Leather manufacturing	29	13,629	9,269	-32.0
Boots and shoes	75	61,232	42,042	-31.3
Paper making	50	28,613	28,883	+ 0.9
Cigar manufacturing	56	18,288	17,020	- 6.9

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responding months of two successive years—December, 1919 and December, 1920.

This comparison may set forth the facts more clearly than does a comparison between consecutive months, especially for highly seasonal industries, because the same month in any two years is presumably subject to purely seasonal influences of about the same intensity. If, however, either month happened to be affected by labor trouble, or something else abnormal, a definite conclusion could hardly be drawn. Thus, the change of + 3.4 per cent for iron and steel between the two Decembers might, by one observer, be taken to indicate a comparatively favorable state of affairs for that industry, a happy contrast to that in other industries; whereas another observer might judge that the better showing was for some reason more apparent than real, because conditions in the *previous* December had been worse for the iron and steel industry than for other industries. In December, 1920 the condition of this industry might have recovered to the extent shown, 3.4 per cent, and still be poor as compared with normal conditions in the industry, or with conditions existing in other industries.

In addition to the difficulty of making suitable mental allowance for any abnormal conditions prevailing during either the current or the base month, there is a further hindrance to the effective use of these percentages of change. The observer is forced each month to use a *different* base month for comparison, and can thereby catch a merely momentary glimpse of alteration in conditions. He is forced to use a *changing* instead of a *stable* norm for making comparisons. This repeated shifting of the base for comparison accentuates the difficulty already pointed out. Thus, after comparing December, 1920 with November, 1920, one must next month compare January with December, then February with January, and so on. In each comparison the observer

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makes such allowances as he can for the characteristics of his shifting base-month. This leads at best to a confusing, kaleidoscopic view of developments, which few if any observers can readily formulate into a coherent or continuous picture of the situation. To do so involves a form of mental gymnastics so difficult and cumbersome as seriously to limit the usefulness of any such presentation.

To sum up: *the month-to-month and year-to-year percentages of change, though a form of presentation much used in reporting current employment and earnings figures, are of use only for making isolated or short-time comparisons, and are serviceable chiefly to that type of reader who is thoroughly familiar with seasonal and other conditions which affect the industries represented.* This form of presentation does not insure safe comparison between industries, and does not permit comparison of the situation in the current month with that in any other month than the one selected as the temporary basis for comparison.

THE CONTINUOUS INDEX FOR IDENTICAL FIRMS

The continuous index is a device by which the status of employment in each consecutive month may be referred to that in a fixed or *standard base period*, enabling the observer to visualize the current situation in a clear picture. It is simply a labor-saving device, the principle of which is the same as that used in determining the amount of change between any two months, except that the reference period is fixed once for all.

The method of constructing an employment index may be illustrated by following through the steps taken in computing a series of index numbers for identical establishments in a single industry. Table 10 records the number of workers employed during each month from July, 1920 through June, 1923 in six identical tanneries in Wisconsin, as reported by

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the Wisconsin Industrial Commission.¹ Since the establishments are the same for each month, the total figures are directly comparable over the entire period. Without conversion they give an accurate picture of the sequence of changes for this group of establishments. Furthermore, as may be readily determined by referring to the reports on manufactures in Wisconsin issued by the United States Bureau of the Census, these establishments include about 65 per cent of the persons employed in tanning in the state, and ought, therefore, to be fairly representative of the fluctuations in the entire tanning industry of Wisconsin.

Comparison of the actual numbers employed in each month may not bring out the full significance of the changes even when, as here, the figures are entirely comparable, particularly if the comparison is made without the aid of a diagram. Moreover, comparison of the sequence of changes in this industry with those in another industry of a different size could not easily be made directly from the series of figures showing the actual numbers employed, except with

TABLE 10.—NUMBER OF EMPLOYES IN SIX IDENTICAL TANNERIES IN WISCONSIN, JULY, 1920 TO JUNE, 1923

Month	1920	1921	1922	1923
January	—	3,566	4,642	4,765
February	—	3,567	4,543	4,790
March	—	3,501	4,385	4,644
April	—	3,533	4,247	4,403
May	—	3,847	4,126	4,093
June	—	4,012	4,081	4,107
July	4,625	4,152	4,215	—
August	4,348	4,145	4,405	—
September	4,088	4,096	4,491	—
October	3,822	4,161	4,445	—
November	3,699	4,161	4,663	—
December	3,644	4,468	4,700	—
Average	—	3,934	4,412	—

¹ *Wisconsin Labor Market*, Vol. III, No. 8, p. 6, August, 1923.

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the aid of a ratio diagram. To avoid these difficulties the figures are expressed as *index numbers* of the simplest form—as *relatives* stated in percentage of a fixed or standard figure. This becomes the basis of comparison, or the *base* of the series of index numbers. The figures of Table 10 have been converted to index numbers, which are shown in Table 11. Employment in each month is here stated as a percentage of the average employment in the year 1922, which is, therefore, the base or 100 per cent.

THE CHOICE OF THE BASE PERIOD

So far as practicable, the base period should be a period of "normal" conditions, not unduly affected either by season, sporadic events such as labor disputes, or the business cycle. In other words, it should be a period of neither extreme activity nor extreme inactivity, but should rather represent *normal* (in the sense of average) conditions. In this instance, the first impulse might be to choose July, 1920 the earliest month for which the data were collected. Such a practice

TABLE 11.—INDEX NUMBERS OF EMPLOYMENT IN SIX IDENTICAL TANNERIES IN WISCONSIN, JULY, 1920 TO JUNE, 1923

[Base: 1922 average = 100 per cent]

Month	1920	1921	1922	1923
January	—	80.8	105.2	108.0
February	—	80.8	103.0	108.6
March	—	79.4	99.4	105.3
April	—	80.1	96.3	99.8
May	—	87.2	93.5	92.8
June	—	90.9	92.5	93.1
July	104.8	94.1	95.5	—
August	98.5	93.9	99.8	—
September	92.7	92.8	101.8	—
October	86.6	94.3	100.7	—
November	83.8	94.3	105.7	—
December	82.6	101.3	106.5	—
Average	—	89.2	100.0	—

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would in general not be advisable for several reasons. First, the base would then be a single month, which is more likely to be affected by a seasonal or a sporadic condition than would some longer period such as twelve months or more. There is a second objection to choosing such a period as July, 1920 as the base. Although there is no evidence that in this month the tanning industry in Wisconsin was affected by any strike or other sporadic occurrence, it is clear that this period was one of unusually active change. The fact is that the industry was in July, 1920 slipping downward rather rapidly after the boom of 1919-1920. The chances are, therefore, that any one month in such a period would be a precarious choice for a base month. It would be better to choose a more *representative* or *normal* period. Generally this would mean a period longer than a month; where possible a year, or even a longer period, such as the five years 1919-1923, would be desirable as a basis for comparison.

A third disadvantage in the use of July, 1920 as a base is that it is more remote from the present than is any other part of the period shown. In general, it is best to select a base which not only represents approximately normal but also fairly recent conditions; this naturally follows from the fact that an employment index is more generally used for the study of present and future fluctuations, than for historical research. Other things being equal, some period in the fairly recent past is preferable to an earlier one as a background for measuring current conditions.

Chiefly for these three reasons, the year 1922 is probably a fairly wise choice for a base period in this particular instance, although some other base, such as the average for 1923, or for the five years 1919-1923, would be preferable to the month of July, 1920. Ultimately there should be wider use of a base covering several years, and greater co-ordination among bureaus in the choice of base periods, but apparently

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the time has not yet come when a standard practice capable of immediate wide application can be formulated.

CONVERTING TO INDEX NUMBERS

Having chosen the base period, the next step is to compute the ratio of the figure for each month to that for the base period. In the example cited, the average of the 12 items for 1922 is 4,412. Each item from the beginning to the end of the series must then be divided by the base; thus 4,625

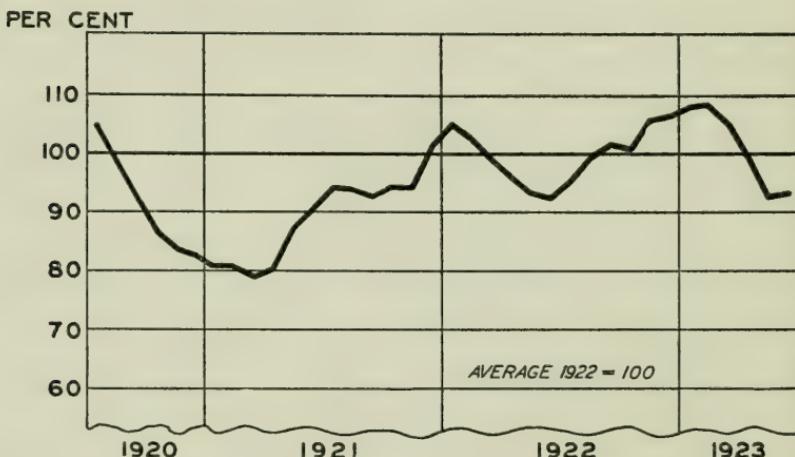


DIAGRAM 14.—INDEX OF EMPLOYMENT IN SIX IDENTICAL TANNERIES IN WISCONSIN, JULY, 1920 TO JUNE, 1923

divided by 4,412 equals 1.048, or 104.8 per cent, and so on. This process yields the results shown in Table 11 and Diagram 14.

Such a method could be used to advantage by individual employers for comparing their own operations with those in their respective industries. This practice should be encouraged by the bureaus. This simplest form of index number, the series of relatives, would naturally be chosen by any tanner to measure the fluctuations of employment in his own

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establishment. By so doing, he could easily compare those with the corresponding fluctuations in the Wisconsin tanning industry generally, as shown in Diagram 14. In this way he might learn, for example, whether seasonal and cyclical changes in the business were being met by other tanners generally at the same time and to the same degree as by himself.

INDUSTRIAL WEIGHTING IN AN INDEX FOR MORE THAN ONE INDUSTRY

The collecting organization or any person or firm could work out an employment index like that described for the tanning industry for any combination of industries for which the basic data were available. In constructing an index for a group of industries, a very important precaution is that no industry be allowed to influence the group index to an extent greater than the actual relative importance of that industry. In other words, the *industrial composition* of the index should be kept representative for the state or other area concerned. The reason for this may be readily seen by considering an extreme case. Thus, no one would consider that an index based on tanneries alone should be accepted as representing all manufacturing in Wisconsin, because obviously all other manufacturing industries would have an influence or a *weight* of zero, and tanneries a weight of 100 per cent, in determining the result. Similarly, if seven flour mills employing about 500 workers and two small blast furnaces employing 35 workers were included with the six tanneries employing 3,000 or more, the distribution of emphasis would be almost equally absurd.

Simple Aggregate for Fixed List of Establishments.—To avoid over-representing or under-representing certain industries—that is, to *distribute the weight* properly among the industries represented—is therefore of prime importance.

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Often it may best be accomplished by proper selection of the sample establishments. As pointed out in Chapter IV, the list of reporting establishments can be so carefully worked out in advance as to allow each industry a representation in the entire sample of employes approximately proportional to that industry's quota of all factory employes in the state. If the sample is thus carefully planned, and reports from all the establishments which are included in the sample are received each month before the index is computed, it is only necessary to add the total number of employes reported each month by all the establishments to secure appropriate industrial representation in the index. This aggregate number employed, as reported by the fixed list of establishments, is then converted to a percentage of the number employed by these same establishments in whatever base period is chosen. The resulting series is then one of *simple aggregate index numbers* for all industries, of the sort described for the tanning industry.

As explained in Chapter IV, this is the procedure followed by the New York State Department of Labor. Its index of employment in manufacturing industries is an aggregate index for a fixed number of establishments. It is computed from month to month from the payroll reports of 1,648 identical establishments. In fact, not all of the 1,648 establishments now reporting to the New York bureau did report at the outset. Some have dropped out and have been replaced by other similar establishments.¹ As has been said earlier, the composition of a sample requires change from time to time to keep it representative. Some industries in the area will grow more rapidly than others, while some may dwindle in importance. For this reason as well as for others which have been mentioned, it is well to re-examine at intervals

¹ The changes in the New York sample have been very few, except in one or two industries, such as millinery, where the instability of firms is marked.

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the samples on which a continuous index of this sort is built in order to keep it in harmony with existing conditions.

A collecting bureau using the aggregate number employed in a fixed list of establishments may sometimes need to compute the index number for the current month before all the reports are in, in case of the loss of a report, or persistent neglect by a firm to make returns. In such instances, it may be assumed either that *no change* occurred in the number employed by the missing establishment and the previous month's figure may be entered for the current month, or else that the missing establishment increased or decreased its force by *the same percentage* as did all other establishments, or other establishments in the same industry. If this is done for a few establishments in a sample including several hundred thousand employes no appreciable error is generally introduced. The preliminary figure obtained in this approximate manner may be replaced by the correct figure if the missing report is later received.

The Weighted Composite Index.—An alternative method of keeping the industrial weighting approximately correct may be used. Suppose that we secure reports only from as many establishments in each particular industry as are deemed necessary to give an adequate representation for measuring employment changes in that industry, but that the standard of adequacy varies from industry to industry, being perhaps 60 per cent of all employes for one, 45 per cent for another, and so on. We can then use the following procedure: (1) work out index numbers for each industry as already described; (2) multiply, each month, the index number for each industry by a number, or *weight*, chosen to represent the relative importance of the industry; (3) add up all the products obtained by multiplying index numbers by weights; and (4) divide the sum of these products by the sum of the weights. This *weighting* process may obviously have the

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effect of making the influence of each industry proportional to its importance in the region, even though some are actually represented by relatively smaller samples than are some of the other industries. To take a simple illustration, assume three industries, for which in a given month the relatives are 105, 108, and 90 per cent of the respective numbers employed in the base period. If the weights, representing the relative importance of the three industries, have been determined, respectively, as 20, 50, and 30 (total 100) per cent, the *weighted index number* for the month will be

$$\frac{(105 \times .20) + (108 \times .50) + (90 \times .30)}{.20 + .50 + .30} = \frac{21 + 54 + 27}{1.00} = 102;$$

that is, 102 per cent of the base number. A similar composite index number would be found each month, the weights used remaining the same from month to month.

Of these two methods, the first has distinct advantages. A sample already properly distributed as to industries enables the bureau to construct group indexes (for all leather products, all iron and steel products, and so on for other groups) or a general index for all industries, by simply adding up the actual numbers each month for the component industries. This method saves much time and is preferred to the "weighting" method whenever the data can be collected from a properly distributed fixed list of establishments.

Two Methods of Computing the Index for Changing List of Firms

Some bureaus find that it is not possible to construct a continuing index from data for identical establishments. This is especially difficult during the period in which a bureau is building up its list of reporting firms. The bureau is naturally uncertain just how much support and co-operation it can count upon, or with what firms it can expect permanently effective relations. It may have to feel its way, and

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build up its index by progressively enlarging the number of establishments and of industries represented.

Shifting-Base or Chain Index.—In such a situation it is natural to fall back upon a comparison of identical establishments in two successive months and the month-to-month percentages of change. Such data, described at the beginning of this chapter, may be combined directly into a continuous series of index numbers called a *chain index*, in which the month-to-month ratios are “linked” together by multiplication. For illustration, suppose that between January and February of a certain year the number employed in the establishments representing a given industry declined 4.3 per cent; between February and March it diminished by 5.1 per cent; between March and April it further diminished by 3.7 per cent; and between April and May it increased 4.2 per cent. If January be selected as a tentative base for the continuous index to be constructed from these links, the number for January becomes 100; for February, 95.7 per cent of 100, or 95.7 (100×0.957); for March, 94.9 per cent of 95.7, or 90.8 (95.7×0.949); for April, 96.3 per cent of 90.8, or 87.4 (90.8×0.963); for May, 104.2 per cent of 87.4, or 91.1 (87.4×1.042); and so on. The figures entering into the process are shown in tabular form below:

	January	February	March	April	May
Percentage of change from previous month		-4.3	-5.1	-3.7	+4.2
Each month as percentage of previous month		95.7	94.9	96.3	104.2
Continuous chain index: each month as percentage of base month, January	100	95.7	90.8	87.4	91.1

When this has been done for the separate industries, the relatives for the different industries may be combined by the method of weighting just described.

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With this index, as with that computed from data for identical establishments, as time goes on, the base month may come to be regarded as too early a base to give the comparisons their maximum usefulness. The characteristics of the base period may eventually be forgotten by the reader. Or the base may prove to have been ill-chosen, either because some special and sudden abnormality characterizes it or because the general employment conditions in the base month may prove to have been much better or much worse than normal, or because the sample of establishments reporting was then much less representative than later. Under these conditions the entire index can be referred by recalculation to another base period—either to some later month, or to the average for a year or a series of years.

The chain index has the advantage of flexibility in the inclusion of varying numbers of firms as the collecting bureau expands its collection of data. And even when such expansion is not taking place, use of the chain method enables a bureau to compute its index without waiting for reports of particular establishments; this often makes possible more prompt issuance of the data.

The identical-establishment index is, however, generally more exact and dependable than the chain index. It is industrially more homogeneous, or in other words its composition cannot greatly vary, either suddenly during short periods or more gradually over a long period. Interpretation is therefore simpler. Again, in the chain type, error in measuring the percentage of change between any two successive months will affect all subsequent items in the chain series. Thus in the example given above, if the February-to-March percentage of change were incorrect, not only the chain-index number for March but also those for April, May, and all subsequent months would be in error. There are on record actual instances of serious distortion of an industry-index

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through mistake or misunderstanding on the part of reporting establishments. In the identical-establishment index, such a mistake would affect only the index number of the month for which the mistake was made.

The identical-establishment type of index is, however, not an easy one to handle, because, as already suggested, a considerable delay may be necessary before all the establishments on the reporting slate have reported. From the important standpoint of promptness in making the results available for use, the chain method is superior. Probably the best results could be obtained by using both methods jointly: by issuing, as early as possible each month, a preliminary index number as shown by the establishments then reported, and later a final figure embodying all establishments on the reporting list under the identical-establishment-fixed-base method. If the chain-index method alone is used, the index must regularly be subjected to scrutiny to prevent accumulative errors.

Fixed-Base Index for Varying Number of Firms.—Another method of utilizing reports from a number of firms varying from month to month is to employ a single base period precisely as is done in the identical-establishment method. By this method all the reports obtainable in a given month (or all the reports received by a given date) are used, provided the reports, or the permanent office records, show for each establishment the number employed in the base period. The numbers employed are then tabulated, for the same establishments, in the base period and the current month, and index numbers expressing the current month as a percentage of the base are computed. Thus a continuous series of numbers relative to the same base is obtained.

Index numbers so computed are subject to considerable error unless the number of establishments reporting is large; and in any case error is likely to be introduced if very large

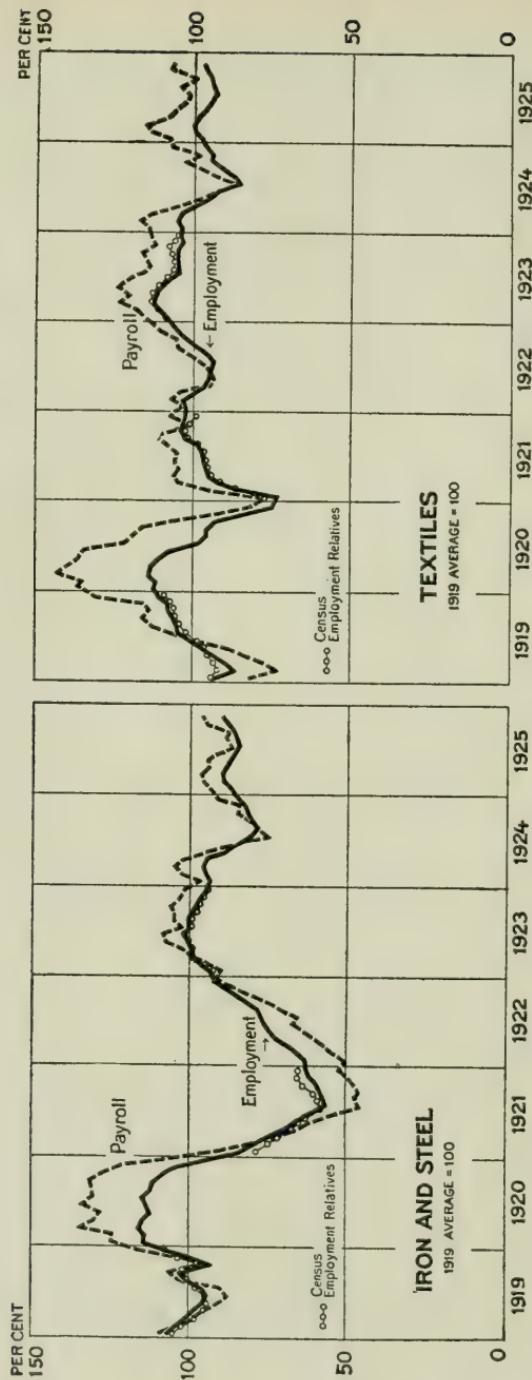


DIAGRAM 15.—USE OF CENSUS DATA FOR ADJUSTING INDEXES CONSTRUCTED FROM CURRENTLY REPORTED PAYROLL DATA
 For discussion of these diagrams, see the article describing the revision of the Federal Reserve Board indexes of employment and earnings in the *Federal Reserve Bulletin*, Vol. XI, pp. 324-330, May, 1925. The monthly data from the censuses of manufactures become available for every other year, and can be used both to correct the secular trend of indexes which have been constructed from current figures and to test the reliability of the current figures as a measure of short-time fluctuations.

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establishments are included in one month and omitted in another. On the other hand, errors introduced by this method are not cumulative, as they are in the shifting-base or chain method, for an error occurring in the calculation of one month's index number does not affect the subsequent numbers in the series. In applying this method efforts should be made to secure reports each month from all very large establishments before the computation is made. This is the method employed by the Canadian Bureau of Statistics in computing its indexes of employment.

CHECKING THE INDEX OF EMPLOYMENT BY MEANS OF CENSUS DATA

The use of the data on employment from the reports of the biennial census of manufactures in planning the original sample and in periodically revising it to keep it representative in respect to industries, size of establishments, and location of establishments has already been explained.¹

In addition, the census data are of great value as a check on the accuracy of the index numbers. The census reports give the total number employed in each factory industry during each month of the census year. Thus every two years, the reliability of the general index for manufacturing industries and of the indexes for all the important component industries can be tested over a complete twelve-month period. Such tests often disclose surprising results as to the validity of small, well-planned samples. They may, however, reveal that the sample is not sufficiently sensitive; that it fails to record faithfully either important short-time changes or the long-time trend. In such cases revision of the sample or else of the method of computing the index should be made. Obviously, the possibility of using the census figures for this purpose is an important argument for adopting a scheme of

¹ See pages 65-69.

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industrial classification which agrees closely with that of the Census Bureau.

In making such use of the census data it must be realized that they are themselves subject to some error. The completeness of the census may vary somewhat from state to state and from census to census,¹ and changes in methods of allocating establishments in the scheme of classification in different years may affect comparisons in the case of particular industries. In general, however, the census figures may be considered highly reliable and can be safely employed as a check on the currently compiled figures.

As an example of the use of the census figures in determining the accuracy of index numbers based on current data, reference may be made to descriptions of the construction and revision of the index numbers of employment, for the main manufacturing industries, maintained by the Federal Reserve Board.² These index numbers, beginning with January, 1919, were constructed in 1923 from the payroll data published by several different bureaus. The shifting-base or chain method was necessarily used and the results were tested and adjusted by means of the census figures for the years 1919 and 1921. These index numbers have since been constructed currently, the federal Bureau of Labor Statistics data as they have become more comprehensive forming a larger part of the source material. When the 1923 census figures became available the index numbers for the several industries were again checked and adjusted. These tests showed, it is of interest to note, that the Bureau of Labor Statistics figures, "on the whole agreed fairly well with the census figures and that the bureau's figures and those of

¹ For example, in 1919 attempt was made to include in the census all manufacturing establishments producing \$500 of product; in 1921 and in 1923 no establishment producing less than \$5,000 of product was included.

² *Federal Reserve Bulletin*, Vol. IX, pp. 1272-1279, December, 1923; Vol. XI, pp. 324-330, May, 1925.

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the Federal Reserve Board were constantly becoming more closely similar." Diagram 15, which is taken from the account of the revision of the Federal Reserve Board indexes, illustrates the high degree of agreement between the index of employment as revised and the three sets of census figures for the textile and the iron and steel industries.

ALLOWANCE FOR SECULAR TREND

The element of long-time growth or decline in the number employed or the earnings in an industry need not be sufficiently important to require consideration in constructing index numbers of employment or earnings, except when the period covered is long, when it may have to be measured and even eliminated. Where this is necessary it may sometimes be accomplished by simple estimation, with the aid of a black thread for finding the trend of the curve. But in general some mathematical method of determination, such as the method of least squares, is preferable. For discussion of this and other methods of measuring secular change, reference should be made to some of the recent literature on the analysis of time series.¹

ALLOWANCE FOR SEASONAL VARIATION

In many industries employment and earnings show a fairly consistent tendency to rise in certain months and fall in other months. The publishing bureau is in much better position than most of its readers to measure this seasonal factor and estimate to what extent current changes are due to seasonal forces, to what extent to changes in fundamental business conditions, and so forth.

¹ The measurement and elimination of growth and seasonal variation in similar time series is described by Warren M. Persons in the *Review of Economic Statistics*, Vol. I, pp. 8-31, January, 1919. The subject is also fully discussed in several recent textbooks. See, for example: Chaddock, Robert E., *Principles and Methods of Statistics*; Crum, W. L., and Patton, Alson C., *Introduction to Methods of Economic Statistics*; Day, Edmund E., *Statistical Analysis*; Mills, Frederick C., *Statistical Methods Applied to Economics and Business*.

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For this purpose a measure of seasonal variation in each industry is needed, and records covering several years, preferably nine or more, are necessary to give a measure of high reliability. The twelve-month moving average, which is sometimes used to indicate the normal seasonal changes, is not well suited to the purpose, as it distorts the form and misrepresents the timing of employment fluctuation. But other methods may be used. A satisfactory one is to determine the *median month-to-month* change for each calendar month over a period of years. The successive steps in eliminating the seasonal influence by this method may be illustrated as follows:

1. Tabulate for each calendar month over the period of years the percentage of change from the previous month. For example, suppose that the January-to-February percentages of change in a certain industry were as follows during the period 1915 to 1923:

January to February, 1915	+	7.1
" " " 1916	-	2.4
" " " 1917	+	5.4
" " " 1918	+	4.1
" " " 1919	-	15.7
" " " 1920	+	7.9
" " " 1921	-	29.5
" " " 1922	+	6.4
" " " 1923	+	4.3

2. Arrange these percentages of change in order of magnitude, taking account of algebraic signs, and determine the middle item, which is the *median*. In the example given above the order of magnitude is

+7.9, +7.1, +6.4, +5.4, +4.3, +4.1, -2.4, -15.7, -29.5

and the median is

+4.3

That is, + 4.3 per cent is taken as the most typical or normal percentage of change between January and February.

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In some cases it is advisable to use the average of the three middle items, thus:

$$\frac{5.4 + 4.3 + 4.1}{3} = \frac{+13.8}{3} = +4.6$$

When an even number of items is used, the median is the average of the two middle items.

3. Having determined the median percentage of change for each calendar month, subtract from the percentage of change for any given month the corresponding median, in order to eliminate approximately the effect of normal seasonal variation. The resulting percentage is assumed to show how much non-seasonal conditions affected the industry in the month concerned. Thus, in the above example, the change between January and February in 1922 was 6.4 per cent. This when corrected for the seasonal factor by subtracting the median of the nine January-to-February changes would become

$$+6.4 - (+4.3) = +2.1$$

For February, 1919 the corrected change would be

$$-15.7 - (+4.3) = -20.0$$

These corrected percentages of change would then be interpreted as the amount by which employment was better or worse than normal in that industry in that month.

In this way the bureau will be able to construct for its own use index numbers corrected for seasonal fluctuation which will be particularly useful in preparing discussion of the figures published each month. Such seasonally corrected results will, of course, have special value for the industries which are highly seasonal. For many such industries some reliable allowance for seasonal influence is essential to any adequate interpretation of the month-to-month comparisons, and will improve the usefulness of the bureau's index of employment to its clientele.

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In this chapter the aim has been to outline certain suggestions pointing toward more effective utilization of the basic employment data furnished the bureau by individual business units. At present the administrative status of the problem does not permit a final statement concerning the best practices for office procedure or the statistical method involved in this index-number problem. The periods covered by the collecting bureaus vary widely; the scope of the statistics collected and the nature of the practical problems encountered also vary. Much progress toward uniformity of practice in handling the problem has been made since the beginning of this committee's work. The present chapter is chiefly intended to point the direction in which opinion is rather definitely moving.

CHAPTER VIII

PUBLICATION OF RESULTS OF THE MONTHLY SURVEY

ONE justification for extensive collection of current statistics of employment and earnings by governmental bureaus lies in the fact that the information is of potential use to a large number of people in watching current business and social conditions. The publication of the results of each month's survey in a form for general distribution becomes, therefore, the purpose toward which the entire process of collecting and analyzing the data is focussed.

Timeliness is of primary importance. The data are needed for their bearing on current situations, and require publication as promptly as possible after the date to which they apply. It has already been pointed out that, so far as consistent with reliability, the methods of compiling the data should be adapted to this end. The sample can be planned with this in view and the list of reporting establishments can be revised from time to time on the basis of their ability to return information promptly. Editing, tabulation, and all further analysis of the data should be arranged to yield the material for publication within a brief interval after the necessary returns are in.

The usefulness of the data depends also on the manner in which they are presented. For reasons pointed out in Chapter VI, a detailed report is needed, and it is desirable that the report should contain textual comment upon the statistics presented. Not only information concerning the dominant trend of events and the amount of change regis-

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tered by the entire group of reporting establishments, but also the same facts for carefully defined unit industries and for important industrial districts within the area covered should be shown. The importance of making information available for individual cities or industrial districts was discussed in Chapter II. Diagram 16 shows the districts for

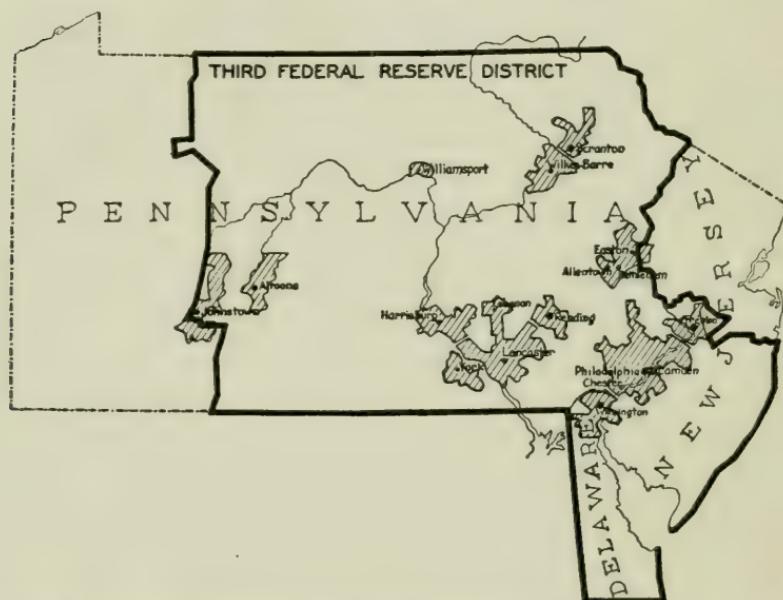


DIAGRAM 16.—INDUSTRIAL AREAS IN THE THIRD FEDERAL RESERVE DISTRICT FOR WHICH THE PHILADELPHIA FEDERAL RESERVE BANK REPORTS MONTHLY CHANGES IN EMPLOYMENT

The 13 shaded areas include about 77 per cent of the population and about 82 per cent of the factory workers in the District.

which one bureau publishes separate employment data in relation to the total area covered by the bureau.

Facts concerning the publication of the current payroll statistics now collected in this country and Canada are shown in the table at the end of Chapter I. All of the governmental bureaus included in the table are now issuing

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some form of regular report containing these data. The reports vary greatly as to the precise detail of content, form of publication, and promptness of release. In this chapter some of the points of difference are considered. The committee, in making recommendations concerning publication, has not overlooked the fact that some of the differences in the reports issued by the bureaus are determined by the important element of expense, and it wishes to emphasize at once its opinion that a simple report presenting only the basic data classified by important industries is much more useful than no report at all. It believes, however, that a full report is desirable. Having incurred the expense of collecting and compiling the data, a bureau can wisely make the additional expenditure necessary for giving adequate publicity to the information. That expense need not be great.

FREQUENCY OF PUBLICATION

It seems clear that payroll employment statistics should be made public as frequently as they are collected. Reference to Table I will show that, with the exception of two manufacturers' associations, which make a weekly survey, all the bureaus at present collecting these statistics obtain monthly data. This interval, as indicated in Chapter IV, appears to be the most practicable, at least for a bureau collecting returns over a considerable area.

FORM OF REPORT

Most of the bureaus issue their reports in printed form. In some cases they are special employment bulletins, containing in addition to information from payrolls the statistics of operations of public employment offices. Such are the present reports of the Wisconsin, Iowa, and Oklahoma bureaus. Those of the New York and Illinois bureaus and of the United States Bureau of Labor Statistics are published

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in department bulletins or magazines, the federal bureau issuing in advance the employment section of its complete publication for distribution to those requesting it. The Massachusetts and the Canadian bureaus issue full reports of payroll data in mimeographed form,¹ while several other bureaus issue advance statements of the results of their surveys in this form to newspapers and to others desiring them.

The printed reports are unquestionably so much more attractive as to render them desirable if the finances of the bureau permit. The mimeographed reports are much less expensive, however, and for prompt circulation of information are to be recommended, even where a printed report is later issued. The Massachusetts bureau, it may be noted, has adopted a policy of reporting its data from month to month in the inexpensive mimeographed form, and of printing later an annual report summarizing the monthly data.² This is much less expensive than issuing 12 printed reports during the year, and avoids delay incident to printing, while making the data available subsequently in a form suitable for permanent preservation.

As to size, there is much to be said for the quarto size, 8½ by 11 inches. The information is wanted in most business and statistical offices for ready reference, and a report of this size is conveniently handled and fits readily into the ordinary filing cabinet. This size of page, moreover, is well adapted to the presentation of tabular and graphic material.

PROMPTNESS OF PUBLICATION

Payroll statistics have been especially recommended in this volume because they are a type of employment statistics

¹ The Canadian report is subsequently printed in the monthly *Labour Gazette* of the Department of Labour.

² See Massachusetts Department of Labor and Industries: Annual Report on the Statistics of Labor for the Year Ending November 30, 1924, Part III, "Trend of Employment and Earnings in Representative Manufacturing Establishments in Massachusetts."

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which may be collected rapidly. Yet the most frequent criticism has been that there is too great delay in the publication of the results. Statistics showing employment conditions on or about the fifteenth of one month are now published by the several bureaus at varying intervals from the tenth of the next month to the first of the third month following, or from three or four to ten or more weeks after the date for which the facts are reported. There are numerous reasons for delay. Returns are received by mail from a large number of concerns, many of which are slow in making up their own figures. The weeks for which establishments report—even though they uniformly include the fifteenth of the month—differ in different concerns, and even in the same concern for different months, so that often the period reported on does not end until as late as the twentieth. In some cases firms are included whose payroll period is the entire month, thus preventing final tabulation until the close of the month. After the returns are received tabulations must be made and month-to-month and year-to-year changes or index numbers computed, usually by an office force inadequate for quick completion of the work.

Another important cause of delay in the appearance of these reports, as well as of others issued by governmental bureaus, is traceable to the routine of governmental printing. Too frequently data of this sort are prepared for publication and submitted for printing within a comparatively short period after their collection, only to lose much of their value as current statistics while awaiting their turn in the printing office. This cause is often beyond the control of the statistical bureaus, but it is one which is clearly subject to remedy. The federal reserve banks have found it possible to secure the printing of their monthly bulletins reviewing business and credit conditions within a few days of the date on which the reports are submitted. Copy for a number of

EMPLOYMENT STATISTICS FOR THE UNITED STATES

these reports is submitted between the twentieth and twenty-fifth of the month and the reports are issued very regularly on the first day of the following month. The early appearance of the monthly employment reports is very desirable, and it should be possible to arrange for prompt printing.

Table 12 shows for several bureaus the average interval between the date to which the figures relate and the date on

TABLE 12.—APPROXIMATE INTERVAL BETWEEN DATE OF PUBLICATION OF PAYROLL STATISTICS AND DATE TO WHICH THEY APPLY

Bureau and report	Approximate interval
U. S. Bureau of Labor Statistics: Monthly Labor Review	10 weeks
Canada: Labour Gazette	$8\frac{1}{2}$ "
New York: Industrial Bulletin	7 "
Philadelphia Federal Reserve Bank: Business Review	7 "
Wisconsin: Labor Market	6 "
Illinois: Labor Bulletin	6 "
U. S. Bureau of Labor Statistics: Employment in Selected Industries	$5\frac{1}{2}$ "
California: Mimeographed report	$5\frac{1}{2}$ "
Oklahoma: Labor Market	5 "
Massachusetts: Mimeographed report	4 "
Philadelphia Federal Reserve Bank: Mimeographed report	4 "
U. S. Bureau of Labor Statistics: Mimeographed report	4 "
Illinois: Press notice	$3\frac{1}{2}$ -4 "
New York: Press notice	$3\frac{1}{2}$ -4 "
Canada: Mimeographed report	$3\frac{1}{2}$ "
Iowa: Employment Survey	$3\frac{1}{2}$ "

which the reports have become available during 1924 and 1925. When two reports are issued both have been included. At the top of the list are the reports containing other than employment data. These evidently need to be supplemented by some form of advance publication. Both the Iowa and the Canadian reports at the bottom of the list omit information on earnings, and the employment information is obtained as of a given day, which makes possible somewhat more rapid return of the data.

PUBLICATION OF RESULTS

How promptly data on employment and earnings can be collected and published satisfactorily has not yet been finally determined. It is worth recording that the figures presented in Table 12 represent substantial improvement over similar figures for the two previous years. It does not seem unreasonable to expect that statistics for a period which includes the middle of one month can be published early in the following month. At least, the committee feels that this goal should be the one toward which to aim. It must be clearly recognized that the larger the sample, the more industries covered, and the more cross-classification introduced, the greater is the likelihood of delay.

Among the more promising suggestions which have been made for increasing the promptness of the reports are the following:

1. To convince employers of the importance of making their returns at the time requested. Efforts to this end can be made directly and much can be done through chambers of commerce and trade associations.
2. To get into communication with the person in each firm charged with the preparation and mailing of the return.
3. To adopt a fixed date for tabulation and the use of telephone or telegraph for following up returns still needed on this date.
4. When printing is a major cause of delay, to use mimeographed reports.
5. To experiment with the use of smaller samples. It has been suggested, for example, that if, with sufficient care, a representative group of 100 or 200 concerns could be selected, it might be possible to obtain their returns each month by telephone or telegraph, and to compile and issue the results of this canvass within a few days, publishing the more inclusive report later.

EMPLOYMENT STATISTICS FOR THE UNITED STATES

CONTENT OF THE FINAL REPORT

The most detailed report of payroll statistics now being issued is that of the Illinois bureau. It contains diagrams showing the course of employment and of earnings, extended comment on the situation as revealed by the statistics, and tables presenting both consecutive index numbers and detailed classification of the current figures by industry, city, size of establishment, extent of operations, and sex. In contrast to this amount of detail, several bureaus present the current data differentiated only in respect to industries and accompanied merely by a brief explanatory paragraph. The difference is accounted for in some cases by the expenditure which can be made for analysis and publication, and in others by the nature of the publication in which the report appears. The Philadelphia Federal Reserve Bank, for example, publishes these statistics in its monthly *Business Review*, in which small space only can be given to employment information. It presents in a single summary table the actual figures for the current month and the change from the previous month in the number employed, the amount of wages paid, and the average earnings, classified by industries. It also gives the percentage of change from the previous month in employment and wage payments in 13 industrial areas in the Third Federal Reserve District.

It is convenient to discuss the content of the final report under four heads: the tables presenting the statistical material, the explanatory comment, diagrams, and special studies.

Tables.—In Chapter VI the variety of possible tabulations of data for the current month was noted and suggestion was made as to the order of importance. Publication presents the problem of arrangement of the data in form for presentation. Various ways of presenting tabular material are pos-

PUBLICATION OF RESULTS

sible and opinions differ as to which are best. That there should be precise standardization of table forms is not essential. Some arrangements are better adapted to the purpose, however, than others. A number of possible arrangements for tables are presented below to suggest economical use of space. In these the amount of information to be presented and the form in which it is presented vary.

The form of table which has been used most frequently is the following. It presents actual figures for identical establishments for two consecutive months and the resulting

TABLE FORM 1.—NUMBER EMPLOYED AND AMOUNT OF PAYROLL,
COMPARISON OF TWO MONTHS

Industry	Number of establish- ments reporting both months	Number of employees			Amount of payroll		
		Nov.	Dec.	Per cent change	Nov.	Dec.	Per cent change

percentages of change. By combining the information on employment and amount of payroll in a single table the necessity of repeating the industrial classification is avoided. With a sufficiently wide page the corresponding data on average earnings can be added to the table. The limitation of this method of expressing the measure of change was pointed out in Chapter VII.¹ If this is used, another table, making comparison between the current month and the same month in the previous year for establishments reporting in both months, is greatly needed.

The actual figures for the earlier month can be omitted from Form 1 without loss of essential information, and the space thus saved can be used to combine in one form the comparison of the current month with both the preceding month and the same month in the preceding year. This

¹ See pages 132-136.

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arrangement is suggested in Form 2. It presumes, it should be noted, a substantially stable list of establishments reporting over the yearly interval. The number of reporting

TABLE FORM 2.—NUMBER EMPLOYED AND AMOUNT OF PAYROLL,
PERCENTAGES OF CHANGE FROM PREVIOUS MONTH AND FROM
SAME MONTH IN PREVIOUS YEAR

Industry	Number of establish- ments	Number of employees			Amount of payroll		
		Number this month (Dec. 1924)	Per cent change from		Amount this month (Dec. 1924)	Per cent change from	
			Dec. 1923	Nov. 1924		Dec. 1923	Nov. 1924

establishments and the actual figures reported for the current month are given. Both are useful in interpreting the figures for all industries and in making comparison between industries. If the number of establishments has changed in the course of a year, the fact should be noted that the percentage of change from the previous year represents comparison for a different number of establishments.

Bringing together two percentages of change in Form 2, both of which are necessary in interpreting the current situation, is of great convenience to the reader. As has been pointed out, however, a record of changes over other periods is needed for any precise evaluation of the data, and such comparisons can be made most conveniently by means of index numbers. In Form 3 index numbers are substituted

TABLE FORM 3.—NUMBER EMPLOYED, INDEX NUMBERS

Industry	Number of establish- ments	Number of employees				
		Employees reported this month (Dec. 1924)	Index numbers 100 = average 1923			
			Dec. 1922	Dec. 1923		
			Sept.	Oct.	Nov.	Dec.

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for the figures showing percentages of change. In this form comparison can be made with as many preceding months as space permits, or as is deemed desirable, through the medium of a base period. The base of the index numbers should be conspicuously shown, either over the columns of index numbers, or in connection with the title of the table. Presentation of a series of index numbers is relatively more desirable for number of employes than for amount of payroll, or for average earnings.

Differentiation by sex is needed, if at all in the current report, only for number of employes and for average earnings. When this separation cannot be made for all establishments in the sample, the number of establishments reporting by sex should be shown. A suggested arrangement for this information is given in Form 4.

TABLE FORM 4.—NUMBER EMPLOYED BY SEX, INDEX NUMBERS

Industry	Establishments reporting by sex	Number of employees			
		This month (Dec. 1924)		Index numbers 100 = average 1923	
				Male	Female
		Male	Female	Dec. 1923	1924 Nov. | Dec.
				Dec. 1923	1924 Nov. | Dec.

Classification of data by size of establishment is not recommended for regular publication. The number employed should probably be so classified regularly for the use of the bureau in making its interpretation of the data. Occasional publication of this information in the form of consecutive index numbers should suffice.

For separate localities the more important information includes the number of employes and the amount of payroll, the latter in order to reveal, if the sample is representative, the fluctuation in local purchasing power. Publication of these figures for all the separate industries in each locality is

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not necessary, but the information, particularly on number employed, is desirable for the important industries in local areas, in so far as it can be shown without revealing operations of individual establishments. The number of firms represented in the sample for each locality is significant. In Form 5 an arrangement for this information is proposed.

TABLE FORM 5.—NUMBER EMPLOYED AND AMOUNT OF PAYROLL
BY LOCALITIES, INDEX NUMBERS

City or district and industry	Number of establish- ments	Index numbers 100 = average 1923					
		Number employed		Amount of payroll		Dec. 1923	1924 Nov. | Dec.
		Dec. 1923	1924 Nov. | Dec.	Dec. 1923	1924 Nov. | Dec.		

For showing extent of operations—information which is of considerable importance in lieu of the more valuable data on employe-hours, which are not now considered practicable for reporting but which may become available eventually—several methods are possible. A useful form for the purpose is the following:

TABLE FORM 6.—EXTENT OF OPERATION IN CURRENT MONTH, BY INDUSTRIES

Industry	Number of establish- ments reporting	Per cent of establish- ments reporting				Per cent of total employes in establish- ments reporting			
		Over- time	Full- time	Part- time	Closed	Over- time	Full- time	Part- time	Closed

Several bureaus have attempted to record the full capacity for employment of the establishments reporting to them. There are obvious difficulties in the way of obtaining comparable figures showing this, but when the reporting is done with reasonable accuracy, the addition of the following

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columns to Form 6 would give additional information of value:

Per cent of capacity employment in plants operating	
Full- time	Part- time

Form 7 suggests a possible method of showing information concerning wage changes. Ordinarily, however, so few changes in wages are reported from month to month that they can be presented satisfactorily in a brief paragraph of text.

TABLE FORM 7.—WAGE CHANGES

Industry	Total number of establish- ments	Total number of employees	Number of establishments reporting wage			Per cent of total employees affected by		
			In- crease	De- crease	No change	In- crease	De- crease	No change

A summary table of index numbers of employment, amount of payroll, and average earnings for the entire sample of reporting establishments is of value. A number of bureaus present in addition index numbers of the retail cost of food, or cost of living. For state bureaus, the printing of the employment index for the nation would be useful in such a table. For this purpose the following form is suggested; its columns can be added to or reduced in number, as desired:

TABLE FORM 8.—CONTINUOUS SERIES OF INDEX NUMBERS

Year and month	Index numbers 100 = average 1923					
	This state			United States		
	Number employed	Amount of payroll	Average earnings	Number employed	Average earnings	Cost of living

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Explanatory Comment.—The position has sometimes been taken that the function of a governmental statistical bureau ends with the collection and publication of basic statistical data, leaving to other persons or agencies their analysis and interpretation. As has been emphasized, however, employment statistics are subject to much misinterpretation. To arrive at their true meaning requires comparisons with continuous previous records, and a type of analysis which most users of the report cannot make for themselves. It is highly necessary, therefore, that the reports containing the detailed current tabulations should also contain explanatory comment which will aid the reader in making correct use of them.

The nature of this comment must depend to a large extent upon the provision which is made for analysis of the figures. It seems desirable to suggest the importance of making the comment reveal significant tendencies and of avoiding the danger of an uninteresting listing of the changes in different industries which may easily be read from the tabular material itself. The fact should not be overlooked that it may be misleading to stress changes occurring in the current month without relating them to the preceding situation. A change in the number employed in a given industry in any month has a quite different significance when it is contrary to changes in the previous months than when it is in continuation of those changes. It is the relations of the current changes to general movements, either seasonal or cyclical, that need to be pointed out in the explanatory comment rather than the amount or even the fact of changes.

A word of caution may be given in respect to the extent of the explanatory comment. Most users of such current reports as we describe desire to devote only a brief time to their examination and are likely to avoid unnecessarily extended discussion of the data. The following quotation from a recent number of the *Monthly Review of Credit and*

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Business Conditions of the New York Federal Reserve Bank summarizes in three short paragraphs the employment situation in one month as revealed by the payroll figures issued by the New York State Department of Labor. Although the discussion here is briefer than would be recommended for a bureau publishing the original tabular material, these paragraphs illustrate the possibility of presenting in a few words a clear statement of the outstanding movements in employment during a month.

A further decline of 2 per cent in factory employment in New York State from April to May was reported by the State Department of Labor, and the gain over a year ago was reduced to 1 per cent. For the country as a whole the May decrease was slightly over 1 per cent. There has been some evidence in June of a further curtailment of factory activity, whereas last year the general level of factory employment was virtually unchanged from May to June.

Working forces in New York State were reduced in May in all the principal branches of the textile industries,—silk goods, cotton goods, woolens and worsteds, knit goods, and carpets and rugs—and in most of these industries May employment was less than that of a year ago. Shoe factory employment also was reduced in May and was substantially lower than in May, 1925.

The metal working industries in most cases reported slight reductions in May but in general were operating at higher levels than a year ago. The iron and steel and railroad equipment industries showed especially large gains over May, 1925, but employment in the automobile industry fell below last year's level. Operations in the building materials industries were at substantially higher levels than a year ago.

Diagrams.—The effectiveness of the report can be greatly increased by the use of diagrams. By no other means can information concerning the relation of the present situation to the past be so accurately told. Such a diagram as that reproduced on the next page conveys at a glance relationships which could not be expressed in words in many paragraphs.

A valid criticism of this diagram is the fact that the base of comparison (June, 1914) is so far removed from the present.

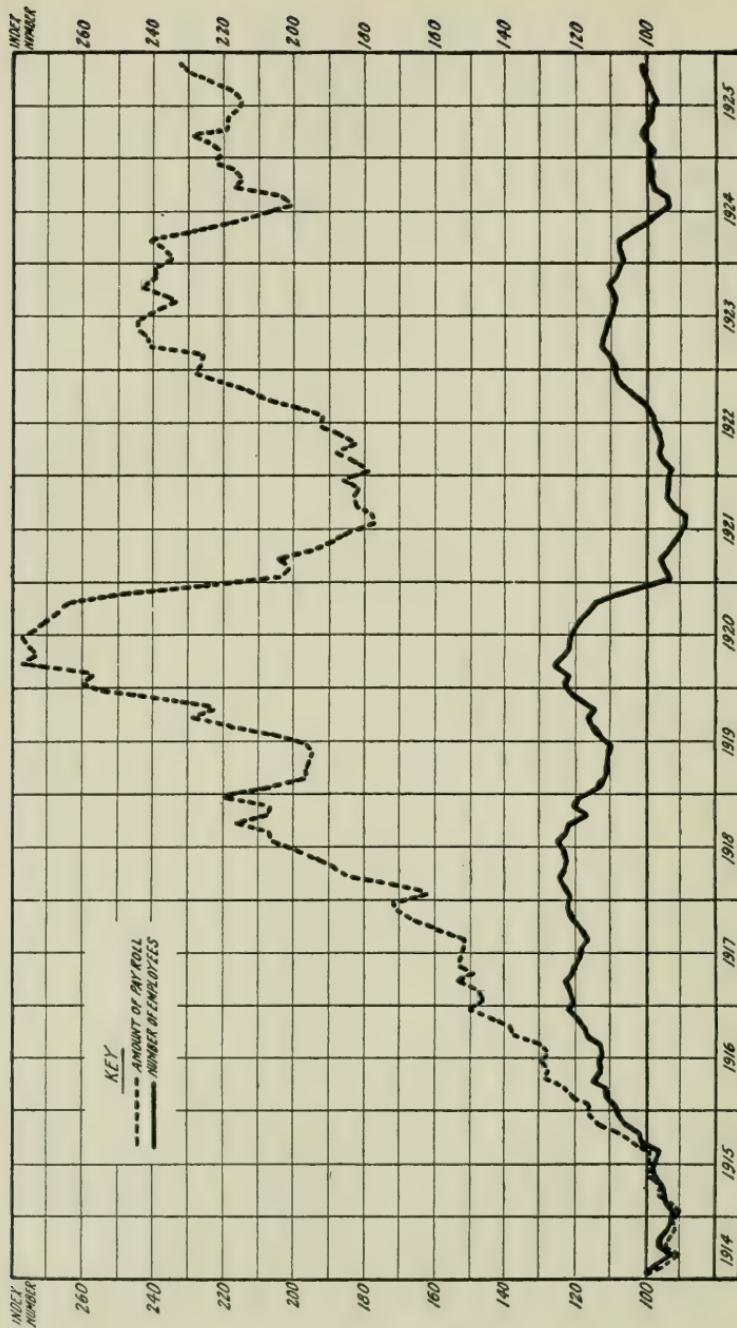


DIAGRAM 17.—NUMBER EMPLOYED AND AMOUNT OF PAYROLLS IN NEW YORK STATE FACTORIES, 1914 TO 1925

Base: June, 1914 = 100

This diagram, which is reproduced from the *Industrial Bulletin* of the New York State Department of Labor, has been published, extended from month to month, regularly since August, 1916.

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A more useful diagram for showing recent fluctuations, or for comparing the movement of the two curves, has recently been added to the New York report. This is shown in Diagram 18. Diagrams of this sort can be brought up to date from month to month with a very small amount of labor.

Expense is usually the factor limiting the use of diagrams. Even if published at infrequent intervals, they are worth while, however. If space is left for the purpose, a diagram once published can be brought up to date readily by the reader for his own information as the new figures become available from month to month.

The use of diagrams, it should be noted, is not limited to printed bulletins. The Canadian Bureau of Statistics regularly includes in its mimeographed report an effective diagram, cut with a stylus.

Special Studies. — Already some of the collecting bureaus have begun to make use of their accumulating series of detailed data for special studies. There is wide opportunity for such use of the figures, and brief summaries of these studies can be presented as part of the current report. The New York bureau has led in this departure. It has recently segregated its full series of payroll statistics back to 1914 by localities, and has published from month to month special articles dealing with the course of employment in individual cities over the full period. It has also published a series of special articles based on the long record for individual indus-

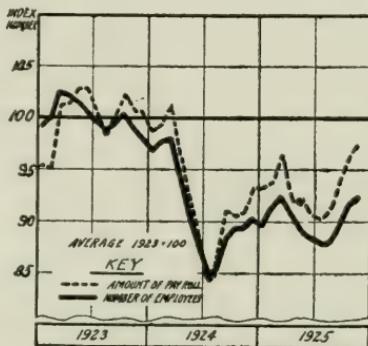


DIAGRAM 18.—NUMBER EMPLOYED AND AMOUNT OF PAYROLLS IN NEW YORK STATE FACTORIES, 1923 TO 1925

Base: 1923 average = 100

Reproduced from the *Industrial Bulletin* of the New York State Department of Labor.

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tries. Recent special articles in its reports have described factory growth in "up-state" urban districts and in New York City. Such special articles form valuable contributions to current reports. They are of a different nature, however, from the current information, and should not be allowed to retard its publication.

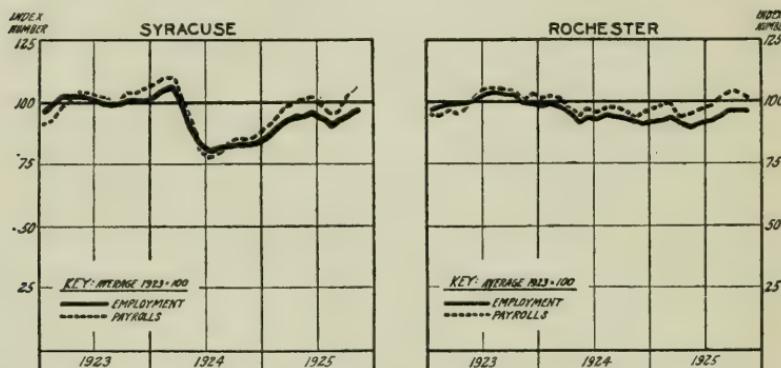


DIAGRAM 19.—INDEXES OF FACTORY EMPLOYMENT AND AMOUNT OF PAYROLLS FOR TWO NEIGHBORING CITIES WHICH HAVE EXPERIENCED DIFFERENT EMPLOYMENT CHANGES

Reproduced from the *Industrial Bulletin* of the New York State Department of Labor.

PRESS NOTICES AND OTHER ADVANCE USE OF THE INFORMATION

In addition to the publication of results of the monthly surveys by the collecting bureau, there is wide secondary distribution of the information in the form of newspaper articles and special notices in business and financial journals. The frequency with which the reports are quoted and the fact that they are quoted in considerable detail in many publications is an indication that they possess genuine news value.

This important secondary publication of the information is based in large part on advance notices issued primarily for this purpose. Practice differs as to the nature of these

PUBLICATION OF RESULTS

notices and the time at which they are released. In some cases an early statement containing the main facts disclosed by the survey is prepared especially for newspaper use before final tabulations of the data have been completed. In other cases the press notice is a portion of the final report and is released to the newspapers at the time the report is sent to the printer.

The importance with which the news releases are regarded is an indication of the necessity for careful preparation of the statements given out. Too frequently the newspaper account of the current employment situation is not a significant one. It should center about the fact the reader most wants to know—whether employment in general is increasing or decreasing. The account is of small value if it leaves only the impression that there were increases in some industries and decreases in others without giving an idea of their net significance. Much of this blurred impression can be avoided if the data are put through the simple processes necessary to secure an index number and the statement prepared for the newspapers deals primarily with the movements of the general index, rather than with the month-to-month percentage of change in a long list of industries. In this connection we may once more emphasize the desirability of computing seasonal indexes of employment and of using them in the interpretation of the current data. Newspapers commonly ascribe to seasonal causes changes in employment which are much greater than can be accounted for purely on seasonal grounds. Unless explicit statements covering this matter are made in the reports given to the press, there is great likelihood of misinterpretation of the figures.

On rare occasions when important changes in employment are taking place the bureau might supply the newspapers with mats from which a graphic chart of the index could be reproduced.

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It is probable that the fullest newspaper use of information on employment and earnings can be secured by issuing specially prepared statements dealing primarily with summary statistics, accompanied by little tabular material. On the other hand, to agencies issuing periodic analytical reports, such as the research departments of banks, tables containing the detailed statistics are more useful than the discussion based upon them. This is particularly true of the federal reserve banks, business services, and other research bureaus. These agencies are not numerous, however, and special arrangements can usually be made to give them early access to the detailed figures. The Federal Reserve Bank of New York, for example, under such an arrangement, secures the tabulations of the New York State Department of Labor each month as soon as they are compiled and in advance of the preparation of special notices for newspaper use; and the Boston Federal Reserve Bank has a similar arrangement with the Massachusetts bureau.

Most newspapers are not prepared to rewrite the material, but accept or reject it as a whole or accept certain paragraphs as they are written. It is well to prepare the newspaper release with this in mind. Occasionally newspapers will want to make inquiries concerning the material, however, and to facilitate such inquiries the Illinois bureau has found it wise to insert prominently at the top of its press notice the telephone number, as well as the name and address, of the bureau.

Newspapers vary in the amount of space they wish to devote to material of this sort. Column and half-column newspaper articles are not infrequent. More attention seems to be given the releases in times of recovery from business depression than at other times; it has, however, been demonstrated that well-written copy can secure good space at all times.

CHAPTER IX

PROCEDURE USED IN A REPRESENTATIVE BUREAU

BY WAY of summarizing the discussion in the foregoing chapters of the methods to be employed in collecting, analyzing, and publishing the current statistics of employment and earnings each month, the present chapter reviews briefly the procedure which is being followed by one bureau, the Illinois Department of Labor. This description is given primarily for the purpose of illustrating the succession of steps taken, and not as an indication that the particular methods used are in all instances approved above all others by the committee.

I. COLLECTING THE DATA

1. Questionnaires are mimeographed in the office; five different forms closely resembling one another are used for the following five industry groups:

Manufacturing
Wholesale and Retail Trade
Public Utilities
Mining
Building and Contracting

2. Questionnaires are addressed by means of a hand addressograph machine. The addressograph plates bear the name and title of the person regularly filling out the questionnaire, as well as the name and address of the firm and its code number, for example:

The Mfg. Co. 201.13
Mr. Auditor
1225 W. St.,
Chicago, Ill.

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These questionnaires are sent to each firm in duplicate, one copy to be retained by the firm and the other to be returned to the bureau. The firms whose reports cover more than one plant, and those whose reports are returned from an office not located at the plant, receive more than two questionnaires. Plates for these firms are kept separate from the others. Plates in each of these two groups are filed by industrial groups, these being subdivided by city and finally alphabetically.

3. Each set of questionnaires is enclosed, with a return-addressed franked envelope, in a franked window envelope.¹ A sealing machine is used. The envelopes are sorted by cities, and placed in mail bags in advance of the date of mailing.
4. The questionnaires are mailed about the twelfth of each month.
5. A follow-up letter is sent about the twenty-sixth of each month to all firms whose reports are not in by that date.

II. EDITING THE REPORTS

1. Returned questionnaires are examined as they are received to determine whether all the necessary information has been filled in. Those found incomplete are sent back with a request for the missing information.
2. From day to day returns are sorted according to the length of the payroll period and, when necessary, the amount of wages paid is adjusted to a one-week basis. The adjustment is made on a computing machine and all calculations are checked.
3. The questionnaires are then arranged in the order of the code numbers of establishments, and the figures reported by each establishment compared with those reported for

¹ The franking privilege is extended to a state bureau by the federal Bureau of Labor Statistics when the collection is made in co-operation with it.

PROCEDURE USED IN ONE BUREAU

previous months as shown on the permanent office records. When discrepancies are indicated, the original returns for the previous month or months are consulted and if necessary the firm is asked to verify the information. Original questionnaires are preserved for four months for such reference.

III. RECORDING THE INFORMATION

1. After comparison of the returned questionnaire with the permanent record, the newly reported figures for each firm are entered on the firm's permanent record card. This is done at intervals as the edited questionnaires accumulate. The information recorded includes:

The number of workers: male, female, and total

The amount of wages: male, female, and total

Extent of operations: part-time, full-time, overtime, closed down, and no report¹

Changes in wage rates

Comments offered in explanation of any of the foregoing information.

2. Record cards are inspected about the twenty-sixth of the month to reveal firms whose returns are not in, preparatory to sending out follow-up letters.

3. The data returned by certain firms are forwarded to the United States Bureau of Labor Statistics. The permanent record cards of these firms are identified by special tabs. When the data are entered on the record cards, they are entered also on forms of the federal bureau. These are forwarded to Washington in lots of 100 or more as they accumulate.

IV. PREPARATION OF TABLES

1. Tabulation is begun about the third of each month. The first step is to eliminate from the series of permanent

¹ The following symbols are used in recording extent of operations: Part-time O, Full-time V, Overtime +, Closed X.

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record cards all those for firms whose data are missing for either the current or the previous month. Successive tabulations are then made as follows:

a. Number employed, by industries, by sex and total, for previous month and current month.

After eliminating cards of all establishments not reporting information by sex (about 75 out of 1,530 cards) the remainder are tabulated by sex. An electric shuttle adding and listing machine is used, on which two series of figures can be added simultaneously. All figures are checked by reading back from the record card. Totals for each industry group are entered from the machine on tabulation sheets; each is read back as it is entered.

The total number employed, for each industry and for all industries, is found by adding together the figures tabulated by sex and those for firms not reporting by sex.

The number of firms represented by each total is determined from the adding machine paper and entered on the tabulation sheet.

b. Amount of wages, by industries, by sex and total, for previous month and for current month.

The results of this tabulation are obtained as in the case of the number employed and are entered on the same tabulation sheet.

c. Number employed, by industries, by size of establishment, for previous month and for current month.

Establishments are divided into five groups on the basis of size (for the size of establishment groups, see page 112), and the number employed is tabulated. The total obtained in this tabulation is checked with that found above.

d. Extent of operation in the current month, by industries.

This analysis is also limited to the subdivisions of the manufacturing group. The number of firms and the total

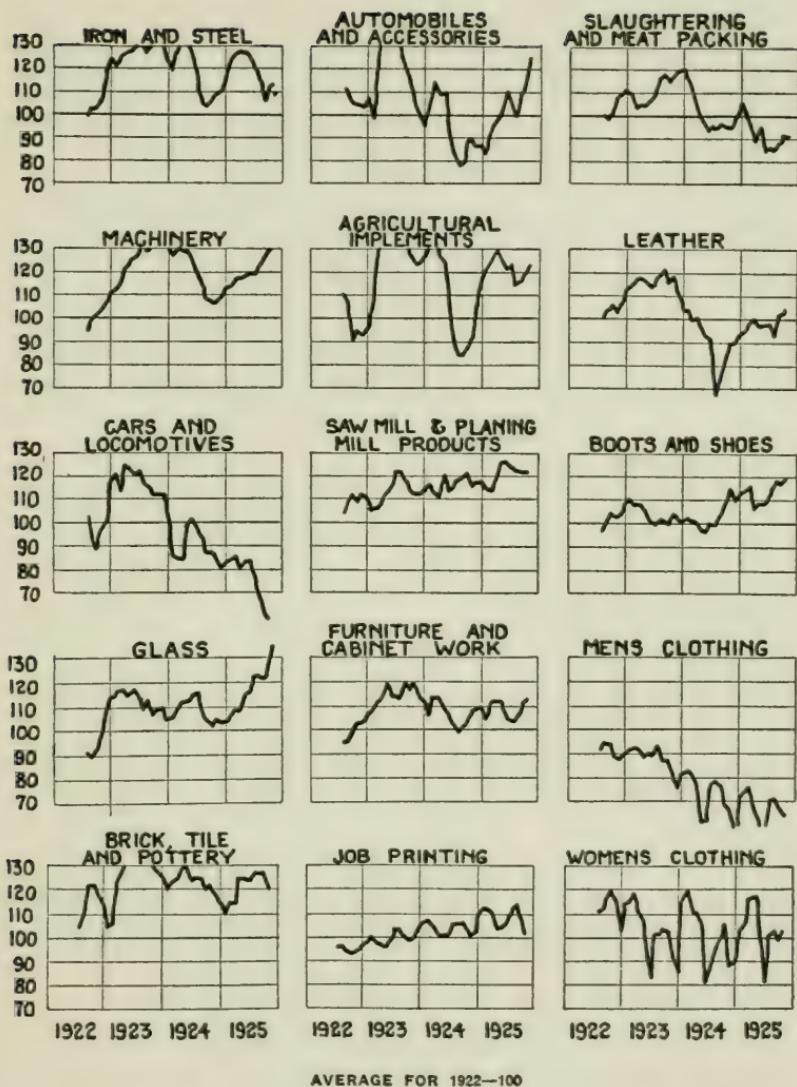


DIAGRAM 20.—EMPLOYMENT INDEXES FOR MAJOR GROUPS OF MANUFACTURING INDUSTRIES IN ILLINOIS, 1922 TO 1925

Reproduced from the *Labor Bulletin* of the Illinois Department of Labor.

EMPLOYMENT STATISTICS FOR THE UNITED STATES

number of workers on the payroll are found, for firms reporting full-time, part-time, or overtime work, and for those closed down, as well as for those which have failed to report on this question. This tabulation is checked by comparison with the total number of employes as above.

e. Number of employes and amount of wages, by industrial districts (number of employes for previous and current month; wages for current month only).

This tabulation is made by the Illinois bureau, by sex, for 13 cities and the change in employment from the previous month and the average earnings are found for each sex in each city. This tabulation is checked by reading back all entries from the record cards.

2. Following tabulation of the reported data, percentages of change from previous to current month are calculated. These calculations are made on a computing machine and are checked by repetition.

3. Average weekly earnings are found for each industrial group, for total and for male and female employes. These calculations are also checked by repetition.

4. Index numbers of employment based on the month-to-month percentages of change are computed for each industrial group.

5. On completion of the tabulating process, all the record cards are rearranged in order of the code numbers corresponding to the scheme of classification and returned to fireproof filing cases.

V. PUBLICATION OF DATA

1. From the tabulations just described, an analysis of the industrial situation in the state is made, and two statements based upon it are prepared for newspaper use. One of these relates to the industrial situation in the state as a whole, while the other discusses the situation in each of 13 industrial

PROCEDURE USED IN ONE BUREAU

districts. These statements are mimeographed in the office and are mailed, two days apart, as early in the month following that to which the figures apply as possible. They are sent to all the newspapers in the state, to certain other newspapers, and to firms and individuals who have requested early reports of the information.

2. The general analytic statement is subsequently published in the *Labor Bulletin* of the department, together with the supporting tables and diagrams. Printer's proof of the text and tables is verified before publication. This bulletin is sent to all reporting establishments.

APPENDIX

APPENDIX

FORMS USED IN COLLECTION AND TABULATION OF PAYROLL DATA

THE following forms have been selected from among the many now in use as illustrative of current practices. In addition to forms for payroll data, two forms used for collecting trade union employment data and the form used in the annual survey of unemployment in Columbus, Ohio, are included.

In considering those for collecting payroll data, reference should be made to the form used by the United States Bureau of Labor Statistics, shown on page 76, and the two suggested by this committee, pages 78 and 80.

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON

Gentlemen:

Since 1915 the U. S. Bureau of Labor Statistics has been collecting from a few hundred representative manufacturing establishments in a few industries throughout the United States data concerning employment and earnings. The establishment reports are totalled by industries and afford an industrial barometer of great value. The figures, when compared from month to month, show the increase or decrease in employment and the change in the amount of money put in circulation in wages, and indicate the extent of part-time employment. The figures reflect the purchasing power of the country and give the employer information of service to him in formulating his plans of operation. In practical value the figures rank with market price quotations, bank clearings, crop reports, etc.

The figures are proving to be of such service to industry that the Bureau is now expanding the scope of its monthly inquiry to include 50 industries and about 7,000 manufacturing establishments. The work can be accomplished, of course, only by the cooperation of employing establishments.

Your firm has been selected as representative of your line of business and you are asked to become one of our regular correspondents. You will observe that figures are desired on the present blank from the pay roll ending nearest

A blank of like character will be sent you for a report to be made each succeeding month. The factory or shop pay roll alone is preferred, but if your factory and office pay rolls are inseparably combined such combination will be acceptable. In filling the blank please specify what forces your report covers.

Your reports will be held confidential, and advance summary figures for all industries will be sent you as soon as completed.

Very truly yours,

Inclosures.

Commissioner of Labor Statistics

LETTER REQUESTING REPORTS OF PAYROLL STATISTICS: UNITED STATES BUREAU OF LABOR STATISTICS (Mimeographed on department letterhead)

The Commonwealth of Massachusetts

DEPARTMENT OF LABOR AND INDUSTRIES

Gentlemen:

This Department has arranged to co-operate with the United States Department of Labor, Bureau of Labor Statistics in the collection, monthly, of industrial information having particular reference to employment and earnings in the industries in Massachusetts. This arrangement has been made in order to avoid duplication in the collection of reports. The information obtained will be published by this Department, and will also be furnished to the Federal Bureau for its use in connection with similar data for other States, in compiling a report for the entire country.

You are requested, therefore, to furnish the report for your establishment on the enclosed form showing the number of employees and the total earnings of these employees for the weekly pay-roll period including or ending nearest the 15th day of the month, together with other incidental information bearing on these two questions. Kindly return the report, if possible, during the week following that reported for.

Information furnished will be held strictly confidential and will be used only in such form as not to disclose the identity of reporting establishments.

Respectfully yours,

Director of Statistics.

Enclosure

LETTER REQUESTING PAYROLL STATISTICS: MASSACHUSETTS DEPARTMENT OF LABOR AND INDUSTRIES (Mimeographed on department letterhead)

This letter was used when the collection of current payroll statistics was begun in 1922.

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON

Gentlemen:

Your Volume of Employment report for the pay roll period ending nearest has not been received. Inclosed is a duplicate blank. Will you kindly fill it and return it to us at your earliest convenience in the inclosed envelope which requires no postage?

Very truly yours,

Commissioner of Labor Statistics
Inclosures.

FOLLOW-UP LETTER: UNITED STATES BUREAU OF LABOR STATISTICS
(Mimeographed on department letterhead)

FEDERAL RESERVE BANK OF PHILADELPHIA

Dear Sirs:

We have not yet received your report on employment and wages for the week ending nearest August 15. As we wish to include the figures for your firm in our compilation, we request that you send this data within the next day or two.

We shall appreciate your promptness in this matter.

Yours very truly,

Chairman

FOLLOW-UP LETTER: FEDERAL RESERVE BANK OF PHILADELPHIA
(Typewritten on letterhead)

NEW YORK STATE DEPARTMENT OF LABOR
BUREAU OF STATISTICS AND INFORMATION

ALBANY, N. Y., June 16, 1923.

GENTLEMEN:

Requests have been received from manufacturers for separate figures concerning the extent of employment and the earnings of men and of women in the factories in this State. In response to these requests provision has been made on the enclosed report blank for separate figures on the number of men and women employed and on the total amount of wages paid to men and to women. If a large enough number of such reports can be furnished, computations of average weekly earnings and employment will be made for men and women separately for the industries in which a sufficient number of each are employed.

If the figures so separated cannot be furnished, please fill in the figures for men and women combined, just as you have made the reports in the past. Separate figures on the number of men and women employed will be useful even though the separation of wage payments cannot be furnished.

Very truly yours,

Industrial Commissioner

LETTER REQUESTING EMPLOYERS TO REPORT EMPLOYMENT AND AMOUNT OF PAYROLL FOR MEN AND WOMEN SEPARATELY: NEW YORK STATE DEPARTMENT OF LABOR (Printed on letterhead)

DOMINION BUREAU OF STATISTICS
OTTAWA

EMPLOYMENT REPORT:

Required under authority of The Statistics Act, George V., 1918, chap. 43.

Kindly provide this Bureau with information relative to the number of persons on your payroll as indicated below:

Date organized or incorporated.....
Date operations commenced.....
Number of employees at commencement of operations.....
Number of employees at present.....
Maximum number of persons to whom employment will be afforded when running to capacity.....
Principal product or activity.....

IF NOT YET IN OPERATION:

Approximate date of commencement of operations.....
Approximate number of persons to be employed at start.....
Maximum number to whom employment will be afforded when running to capacity.....

IF THIS IS A RE-ORGANIZATION OF AN OLD FIRM,
PLEASE GIVE:

Former firm name.....
Approximate number of employees in January, 1920.....
Signature.....Official Title.....
E. S. 3 - Employment Report - New firms.

FORM FOR OBTAINING INFORMATION NEEDED FOR CLASSIFYING NEWLY ESTABLISHED FIRMS: CANADIAN BUREAU OF STATISTICS (Multi-graphed, size 8 by 10 inches)

STATE OF NEW YORK
DEPARTMENT OF LABOR
BUREAU OF STATISTICS AND INFORMATION

ALBANY, N. Y., *March 19, 1923.*

GENTLEMEN:

It is the desire of this office to make the industry classification of reports contained in the Labor Market section of the Industrial Bulletin as accurate as possible. The record of products for numerous factories has not been revised for several years. More definite information will be of assistance also in interpreting industrial conditions as revealed by these reports.

For this purpose you are requested to supply the information called for below:

Very truly yours,

By:

Chief Statistician.

Industrial Commissioner.

Products in order of importance.....

(Specific rather than general products are required. For instance, a factory producing machinery should indicate the particular type, such as wood working, paper making, printing, etc.)

If products are used as raw materials, components or equipment for other industries, please specify the principal industries in which your products are used.

(It will be useful, for instance, to know whether a paper box factory is producing boxes chiefly for the clothing, confectionery or other industries.)

Remarks. Information concerning the market served, etc., will also be appreciated.

FORM FOR OBTAINING INFORMATION NEEDED FOR REVISING CLASSIFICATION OF FIRMS: NEW YORK STATE DEPARTMENT OF LABOR (Printed, size 8½ by 11 inches)

City _____ No. _____

CONFIDENTIAL REPORT ON EMPLOYMENT AND WAGES

to the

FEDERAL RESERVE BANK OF PHILADELPHIA

and the

DEPARTMENT OF LABOR AND INDUSTRY, COMMONWEALTH OF PENNSYLVANIA

This form is to be used for reporting confidential information for your firm for the payroll period ending nearest the 15th day of December 1924. Please mail the white copy of this report in the enclosed addressed envelope at the earliest date possible.

1. Number of wage earners on payroll _____
(do not include salaried executives and office employes)
2. Total wages paid during payroll period _____
(do not include salaries of executives and office employes)
3. Please check whether the above figure is for

one week	_____
two weeks	_____
half month	_____
month	_____
4. Have you made any change in wage rates since November 15, 1924? _____ If so, please state: _____
Per cent of increase _____ Number of wage earners affected _____
Per cent of decrease _____ Number of wage earners affected _____
5. REMARKS: If there have been any special circumstances such as strikes, shutdowns, or changes in working time which would affect the significance of your figures, please note the same here:

Name of firm _____ Signature _____

Location of plant _____ Official title _____

QUESTIONNAIRE FOR PAYROLL STATISTICS: FEDERAL RESERVE BANK OF PHILADELPHIA
(Multigraphed, size 8½ by 11 inches)

GENERAL ADVISORY BOARD
ILLINOIS FREE EMPLOYMENT OFFICE
in cooperation with the
U. S. BUREAU OF LABOR STATISTICS

VOLUME OF EMPLOYMENT—BUILDERS AND CONTRACTORS

Please answer the inquiries on this blank and return it to 116 N. Dearborn St., Chicago, in the accompanying envelope which requires no postage. One copy of the questionnaire may be retained for your files. Figures are desired for the payroll nearest October 15th, for one week if possible. It is desired that the report reach our office not later than October 25th, 1923.

THIS REPORT SHOULD COVER ALL BUILDING & CONTRACTING WORK
NOW UNDER WAY IN ILLINOIS

1. In or near what cities are you working.....
2. Payroll ending October..... 1923.
3. Period covered by payroll.....
(One week, half-month, etc.)
4. Number of Employees on Payroll Total Amount of Payroll
..... \$..... \$..... \$.....
(Male) (Female) (Total) (Male) (Female) (Total)
5. Do these figures include office employees.....
6. In the period from September 15th to October 15th, 1923, did you make any changes in RATES of wages, if so, give date.....
Was the change an INCREASE.....
or DECREASE.....
Percent of change.....
Percent of employees affected.....
7. If there has been a marked increase or decrease in the amount of the payroll as compared with the previous month, or in the number of persons on the payroll, please state reason.....
8. Were you working in October full time.....
part time..... closed down.....
9. Name of person signing report.....
10. Position held in firm.....

QUESTIONNAIRE FOR PAYROLL STATISTICS: ILLINOIS DEPARTMENT OF LABOR (Mimeographed,
size 8½ by 11 inches)

This form is sent to building contractors. Forms for manufacturing, public utility, mining, and trade establishments are closely similar.

Industrial Commission of Wisconsin Form A-32

MONTHLY PAYROLL REPORT

Employer's Name Trade or Business.....

Address Month Reporting.....

KIND OF WORK	PERIOD OF PAYROLL* Which should include 15th day of month.	TOTAL NUMBER OF EMPLOYEES ON PAYROLL	TOTAL AMOUNT OF PAYROLL
Office	From..... to.....		
Sales Force	From..... to.....		
Non-selling			
Total	From..... to.....		

This schedule should be filled out and returned before the 25th day of the month.

* It is not necessary that the payroll cover a stated length of time. It may cover one week, two weeks, or a month. However, it must include the 15th day of the month, or if the 15th falls on Sunday, the 14th day of the month.

FORM FOR TRADE ESTABLISHMENTS

Industrial Commission Form A-33

MONTHLY PAYROLL REPORT

Hotels and Restaurants

Employer's Name

Address

Number of clerical employees

Number of manual employees

Take number from that payroll which includes the 15th day of the month.

This schedule should be filled out and returned before the 25th day of the month.

FORM FOR HOTELS AND RESTAURANTS

QUESTIONNAIRES FOR PAYROLL STATISTICS: WISCONSIN INDUSTRIAL COMMISSION

(Printed on cards 3 by 5 inches)

The form used for manufacturing establishments is similar to that for trade establishments except that the classification under "Kind of work" is: Clerical, Manual, and Total, and an extra column is added for the number of persons leaving the employ of the firm during the payroll period.

The Commonwealth of Massachusetts

Department of Labor and Industries

Monthly VOLUME of EMPLOYMENT Report

Please answer the inquiries below, and return the completed form in the accompanying envelope, so as to reach this office as near the *25th of the month as possible*.

Questions 2 to 6, inclusive, have reference to the weekly pay-roll period including or ending nearest the **FIFTEENTH** of the month. When such a pay-roll period includes a holiday cessation of operations, kindly report instead for the week following or prior thereto.

1. Principal products:.....

2. Report covers weekly pay-period ending:.....192 .
(Month) (Day)

3.

Amount of Weekly Pay-roll	Number of Wage- Earners Covered
Males: \$.....
Females: \$.....
Totals: \$.....

 (Give Totals only, if data by sex cannot readily be furnished. Exclude salaried executives, salesmen, and others not "wage-earners.")

4. How many wage-earners do you normally employ?..... 5. Establishment operated what PER CENT of FULL TIME?.....

6. If the pay-roll reported above shows a marked change in amount or in the number of persons covered, when compared with that including the 15th of last month, please state reason for change:
.....

7. If any general adjustment was made in **RATES** of wages during the period from the 15th of last month to the 15th of the current month:

(In- or De-)

(a) Give Date:..... (b) Nature of adjustment:.....crease
(c) Percentage of change:..... (d) Number affected:.....

Above report completed by:.....

Co-operating with U. S. Dept. of Labor—Bureau of Labor Statistics

QUESTIONNAIRE FOR PAYROLL STATISTICS: MASSACHUSETTS DEPARTMENT OF
LABOR AND INDUSTRIES (Printed on department letterhead, size 8½ by 11
inches)

WAGE SCHEDULE

Name and Address		Number of plants on this schedule _____					
PM 1067		Chief product _____					
Plant Address: (If other than above)		What is your payroll period? Weekly _____ Bi-weekly _____ Semi-monthly _____ Monthly _____					
FILL IN ALL SPACES UNDER HEADINGS BY CLASS OF WAGE EARNER		Dates covered by this report? From _____ to _____					
Period Week Ending	Classification of Wage Earners	Number of Wage Earners	Total Hours Worked by Wage Earners This Period (by class)	Actual Payroll of Wage Earners This Period (by class) (Nearest dollar)	Plant Hours Worked This Period	Plant Hours Lost This Period Through Holidays or Accidents	Regular Number of Hours Per Week (44, 48, 50, etc.)
Sept. 15, 1923	Male	Common and Unskilled					
		Semi-skilled and Skilled					
		Female					
Please do not write in these spaces →							

Fill out in duplicate. Keep one copy for your files. Please mail other promptly after close of period indicated to:

National Industrial Conference Board, 10 East 39th St., New York City

(OVER)

QUESTIONNAIRE FOR PAYROLL STATISTICS: NATIONAL INDUSTRIAL CONFERENCE BOARD (Printed, size 6½ by 8½ inches)

On the back is printed a sample filled-out form and the following directions:

A composite return may be made for all plants in one state. Please report same plants for which data were furnished in previous study.

If your payroll figures submitted are for more than one week, please include the week designated in first column.

Term "wage earners" does not include executives, office and salesforce, foremen and their assistants, if paid on a salary basis. Male "common and unskilled labor" is defined as that for which no previous training is required. Male "semi-skilled and skilled" includes all other male labor. Female labor includes all women wage earners except clerical workers.

[Example of "Total Hours"]—Out of a group of four workers if one man works 40 hours, another 45, another 50, and another 55, the grand total worker hours amounts to 190.

DECEMBER REPORT: Please fill out and mail promptly to State Department of Labor, Albany, N. Y. Retain second sheet for your files.

NEW YORK STATE DEPARTMENT OF LABOR

ALBANY, N. Y., December 20, 1924

GENTLEMEN:

To obtain, for public information, monthly figures of changes in employment and wages, this Department requests you to submit the data called for below. No information of any description as to individual firms will be made public. This report should be submitted immediately.

By:

E. B. Patton
Chief Statistician.

Very truly yours,

Bernard L. Shantz
Industrial Commissioner

Report on Employees and Wages

Directions. The figures must be taken from pay rolls or other records. Use that pay roll in which the 15th of December fell. Indicate by dates in the first column the period covered.

Pay Roll Period		Number of Employees on Pay Roll			Total Wages Paid to—		
		Office force	Shop force	Total	Office force	Shop force	Total
Beginning	Men						
Dec.	Women						
Ending							
Dec. _____ 1924 (Please enter date)	Total						

Has any change in wage rates been made effective since November 15, 1924?

If so, please give the following information:

Increase - Per cent _____ Number of employees affected _____
Decrease - Per cent _____ Number of employees affected _____

Please note here any change in actual working time since November 15, 1924, giving weekly hours before and after the change.

Kindly note here any special circumstances, such as:

Labor troubles
Branch factories opened or closed.
New products.
Market conditions.

Date _____ Signed (name) _____

11-12-24-4800 00-2790

Title _____

QUESTIONNAIRE FOR PAYROLL STATISTICS: NEW YORK STATE DEPARTMENT OF LABOR (Printed, size 8½ by 11 inches)

NEW YORK STATE DEPARTMENT OF LABOR
BUREAU OF STATISTICS AND INFORMATION

ALBANY, N. Y.,

192 .

GENTLEMEN:

Will you please furnish the following information for our semi-annual study of overtime and part-time work?

Please do not delay your regular report, but forward this as soon as it can be prepared.

Very truly yours,

Industrial Commissioner

OVERTIME and PART-TIME—one week only

Week ending December 192

	SHOP EMPLOYEES		
	Men	Women	Total
Number of employees working			
Overtime.....
FULL time.....
Part time.....
Total

FULL-time hours are those worked when the plant is operating the full normal weekly hours.

Any reduction affecting part or all of a plant, *even for several months*, is part-time. (Do not count less than half a day's loss.)

FULL-time hours (for NORMAL operation)

Days per week (5, 5½ or 6).....	NUMBER OF	
Hours per week (44, 48, etc.)	Men	Women
.....
.....
.....

Please enter the full-time working hours of your plant.

If several departments have different working hours, please give separate figures for each and estimate the number of employees.

Signed (Name)..... Title.....

FORM FOR INQUIRY ON OVERTIME AND PART-TIME WORK: NEW YORK STATE DEPARTMENT OF LABOR (Printed, size 8½ by 11 inches)

This form is sent semi-annually to the firms submitting the monthly payroll reports.

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
B. L. S. 325

INDUSTRY..... No.....

PLANT.....

ADDRESS

MONTH	NUMBER ON PAY ROLL			AMOUNT OF PAY ROLL		
	1922	1923	1924	1922	1923	1924
Jan.....				\$.....	\$.....	\$.....
Feb.						
Mar.....						
Apr.						
May.....						
June						
July						
Aug.....						
Sept.....						
Oct.....						
Nov.....						
Dec.						

FORM FOR PERMANENT RECORD OF FIGURES RETURNED CURRENTLY BY
INDIVIDUAL FIRMS: UNITED STATES BUREAU OF LABOR STATISTICS
(Printed on white card 6½ by 8 inches)

Group								City	No.
Industry								Firm	
	Number of wage earners	Total wages paid		Change in wage rates since last reports					REMARKS
		Factor	Weekly	% increase	No. affected	% decrease	No. affected	Follow-up sent	
1922	Av.								
1923	Av.								
1924	Av.								
1925	Jan.								
	Feb.								
	Mar.								
	Apr.								
	May								
	June								
	July								
	Aug.								
	Sep.								
	Oct.								
	Nov.								
	Dec.								
TOTAL									
Yearly Av.									
1926	Jan.								
	Feb.								
	Mar.								
	Apr.								
	May								
	June								
	July								
	Aug.								
	Sep.								
	Oct.								
	Nov.								
	Dec.								
TOTAL									
Yearly Av.									

FORM FOR PERMANENT RECORD OF DATA RETURNED CURRENTLY BY INDIVIDUAL FIRMS:
FEDERAL RESERVE BANK OF PHILADELPHIA (Printed on yellow card 11.8 by 10.1 inches)

In the column labeled "Factor" under "Total wages paid," is entered the figure by which amounts of payroll for periods other than one week are multiplied to convert them to a one-week basis.

FIRM NAME				PROP.—ALT. NAME			CROSS REFERENCES			BRANCH NUMBERS			OFFICE NUMBER		GROUP
ST. AND NO.				CITY OR VILLAGE			COUNTY			PRODUCT					
192	MEN			MEN			WOMEN			WOMEN					
	EMPLOYEES			WEEKLY WAGES			EMPLOYEES			WEEKLY WAGES					
	OFFICE	SHOP	TOTAL	OFFICE	SHOP	TOTAL	OFFICE	SHOP	TOTAL	OFFICE	SHOP	TOTAL			
JAN.															
FEB.															
MAR.															
APR.															
MAY															
JUN.															
JUL.															
AUG.															
SEPT.															
OCT.															
NOV.															
DEC.															
Days of Week Covered by Payroll. _____															

FORM FOR PERMANENT RECORD OF DATA RETURNED CURRENTLY BY INDIVIDUAL FIRMS: NEW YORK STATE DEPARTMENT OF LABOR (Printed on yellow card 7½ by 10 inches)

The back contains space for similar record for another year and, in the upper right-hand corner, the code number for filing.



The Commonwealth of Massachusetts
DEPARTMENT OF LABOR AND INDUSTRIES

DIVISION OF STATISTICS
ROSWELL F. PHELPS
DIRECTOR

E. LEROY SWEETSER, COMMISSIONER
STATE HOUSE, BOSTON

EMPLOYMENT AND MEMBERSHIP REPORT

NOTICE:—Kindly answer each question in order that further correspondence may be rendered unnecessary. If any question is not applicable to your organization, mark it with a check mark (X). Where the proper answer is "NONE," this word should be written, so that we may know the question has been considered by you. Remarks with reference to any of the inquiries may be written on the reverse side of this schedule.

All information is to be given as of the date. _____

1. File Number and City or Town where your organization is located. _____
2. Name and local number of your organization. _____
3. Membership of your organization. _____ Men _____ Women _____ Total _____
4. Average number of days members were employed during last week in the month given above. _____
5. If any members were entirely unemployed, enter number opposite the questions that apply:—
 - (a) Lack of work or material? Men _____ Women _____ Total _____
 - (b) Unfavorable weather? Men _____ Women _____ Total _____
 - (c) Strike or lockout? Men _____ Women _____ Total _____
 - (d) Sickness, accident or old age? Men _____ Women _____ Total _____
 - (e) Other reasons? Men _____ Women _____ Total _____

Totals [Add figures shown opposite (a), (b), (c),
(d) and (e)]. Men _____ Women _____ Total _____

(Signature of correspondent supplying the above information.)

(Official position.)

(Address)

Date _____ 192_____

13

**FORM PREVIOUSLY USED BY THE MASSACHUSETTS DEPARTMENT OF LABOR
AND INDUSTRIES IN COLLECTING TRADE UNION EMPLOYMENT REPORTS
(Printed, size 7 by 8½ inches)**

O. H. M. S.

NO POSTAGE

Your co-operation in making these monthly reports is greatly appreciated.

Cause of any marked change since last report.

.....
.....
.....
.....
.....
.....

EMPLOYMENT SERVICE OF CANADA,

DEPARTMENT OF LABOUR,

OTTAWA, ONT.

FRONT

**DEPARTMENT OF LABOUR, CANADA
TRADE UNION REPORT ON UNEMPLOYMENT**

Members entirely out of work on last working day of month.
Omit members employed in work other than their own trades,
members who have moved from your district, and members
idle because of sickness, strike or lockout.

Membership of Union
on last working day of

Members on short time on last working day of month.....

Please indicate any change in name, number of union, or address

Please Read
Questions care-
fully before
Answering

Before mailing kindly score out your address but do not obliterate number.

Signed.....
E. S. 2 Trade Union Report—Employment Service of Canada.

Office in Union.....

Mail not later than 3rd of month.

BACK

FORM USED BY THE EMPLOYMENT SERVICE OF CANADA IN COLLECTING
TRADE UNION EMPLOYMENT REPORTS (Printed on card 3½ by 6 inches)

Street and House No.			Present or last regular employment				Visitor		
Relation to head of household	Sex	Race	Employer 4.	Industry 5.	Occupation 6.	Employed now	Idle		
1.	2.	3.				Full time 7.	Part time 8.	How long 9.	Reason 10.
a. Head									
b.									
c.									
d.									
e.									
f.									

List all persons 18 years of age or over except women not usually employed. If native-born, enter in column 3 "N. W." for native white and "N. C." for colored; if foreign-born enter "Eng." for English, "Ger." for German, "Heb." for Hebrew, "Irl." for Irish, "Ital." for Italian, "Mag." for Magyar (or Hungarian), "Pol." for Polish, "Sc." for Scotch, "Slow." for Slovak, "W." for Welsh, and "Other" for all other foreign-born. If employed part time enter in column 8 approximate fraction of time working. If idle enter in column 9 number of weeks since regularly employed.

Notes _____

FORM USED IN THE COLUMBUS, OHIO, SURVEYS OF UNEMPLOYMENT
(Printed on white card 5 by 8 inches)

This has been used in five annual unemployment surveys, beginning in October, 1921. One card is filled out for each household canvassed.

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